The Veterinary Record.

(*Founded by William Hunting, F.R.C.V.S., 1888.*)

No. 39. SEPTEMBER 28, 1929. Vol. 9.

National Veterinary Medical Association of Great Britain and Ireland.

FORTY-SEVENTH ANNUAL MEETING, AYR, 1929.

Presidential Address

BY

O. CHARNOCK BRADLEY, M.D., D.Sc., M.R.C.V.S.,

Principal of the Royal (Dick) Veterinary College, Edinburgh.

At this, the earliest possible moment of the Congress, I wish to express, though in quite inadequate words, how highly I appreciate the honour of being President of the Association. Though this is not the first occasion on which I have been privileged to preside over a Congress, my pride in the confidence my fellow-members have placed in me is not one jot minimised by repetition : it is, on the contrary, enlarged.

The recollection that I occupied the Chair at a Congress of the Association seven years ago furnishes me with a text for the constitutionally compulsory Presidential Address. As I see them, the last seven years have been so full of incident and progress, not merely within the ambit of the Association, but in almost every aspect of veterinary science and practice, that they will be regarded by the future historian of the profession as standing out in such conspicuous prominence as to entitle them to a separate and special chapter. Of the future we are mercifully kept in ignorance, but if the coming seven years are marked by changes as numerous and progressive as those that have preceded them, the President of the 1936 Congress will have no difficulty in finding material for his Address.

So far as the Association itself is concerned, it may safely be claimed that no seven years of its existence have been so notable and noteworthy as those that are now ending. In 1922, when the Annual Congress was held at Bath, the re-organised Association had barely begun to function, and it was then next to impossible to predict in what direction it would move. Many of its activities were frankly experimental. It was easily possible that some, at least, of its aims and ambitions might have to be abandoned. Many of the older, and indeed some of the younger members were not by any means certain that the organisation and avowed objects of the Association were altogether sound. This may now be freely admitted, because there is every evidence that those who came in doubt have stayed in loyal support. It may also now be frankly confessed that in 1922 the financial position of the Association was far from satisfactory ; and I, for one, did not court an enquiry into our slender means. In fact, I was definitely accused of conducting the General Meeting of the Bath Congress in "far too hurried and hole-and-corner manner." If it is not true that, at that time, we were actually bankrupt, it is at any rate a fact that we should have had some difficulty in persuading the most credulous enquirer that we were wealthy. It must not be imagined that this has been said to lead up to the boast that now, seven years later, the Association suffers from plethora of funds ; but it can at least pay its way and still contemplate, cautiously, of course, extension of its activities.

In 1922 the official headquarters of the Association consisted of exceedingly cramped and inconvenient rooms in Buckingham Palace Road—accommodation that we should now regard as derisive, but all that could be afforded at that time. When the offices were removed to Gray's Inn Square the officials of the Association regarded the step as an enormous advance towards dignity, with the learned atmosphere of one of the Inns of Court as a great asset. But now more spacious accommodation is again needed, and it is highly probable that before long a new and larger house must be found.

Some may regard the clothing of the President in distinctive and modestly resplendent raiment as of no particular consequence, and as not meriting mention in a review of progress ; but personally I think the innovation had its significance. Certainly the provision of a chain of office was an outward manifestation of an inward, and I believe, very real sentiment. Inasmuch as each Division of the Association provided a link, the chain is a symbol. (Applause.)

But material and demonstrable changes, remarkable and significant though they may be, are as nothing when compared with the elusive and imponderable mutation and augmentation of the influence of the Association during the past seven years. Those who are not actually concerned with the daily and

weekly routine work at headquarters, and the periodic special demands that are now imposed on the Association, cannot possibly realise what the last seven years have brought in their train: nor can I inform them. Words are vain. But I think we can all form some conception of the expansion of influence that has occurred when we remember that in 1922 the Association was composed of Divisions and Branches confined to the United Kingdom. To-day it has affiliated Associations in British Columbia, the Far East, New Zealand, South Africa, Southern Rhodesia, Uganda, and Kenya Colony.

Thus, in all modesty, it may be claimed that this is not the Annual Congress of an Association that belongs to Great Britain and Ireland only, but to the British Empire. Had it not been for sentimental reasons, the suggestion that was made some time ago that the name of our corporation should be changed to *The British Veterinary Association* would doubtless have been followed, though at that time overseas Branches were not numerous. In view of oversea expansion, if the time has not yet come—and personally I think it has—for a re-consideration of the suggestion, it cannot be far distant. But take this remark as of the nature of a footnote, and regard rather the influence the Association now exerts in binding together the whole of a widely scattered profession—an influence that even now is of high potentiality, but, it is safe to prophesy, will increase and increase with the years. Nor is the linkage of colonial societies with the parent body a mere formality. Were it so, gratification would indeed be small. I am happy to be able to say, on the contrary, that, in increasing measure, it is already vouchsafed to the parent to help the younger members of the family, and reciprocal help is not improbable.

Another fact of considerable import. The official organ of the Association, the *Veterinary Record*, has gradually become an instrument for the dissemination of information not only to those who live in the British Possessions, but to practitioners of veterinary science belonging to other nations. There are, indeed, very few corners of the civilised world into which the *Record* does not penetrate. In founding the periodical William Hunting builded better than he knew. This was not the least of the invaluable services he rendered to veterinary science—and they were not few.

And to all these eminently satisfactory evidences of progress must be added an event of recent occurrence and signal moment. To the great gratification of the whole body of members, a few weeks ago H.R.H. the Prince of Wales graciously consented to become Patron of the Association. This, in conjunction with the Honorary Associateship that a few years ago he accepted from the Royal College of Veterinary Surgeons, we are justified in regarding as clear proof of the interest the Prince takes in the veterinary profession. (Applause.)

Though the past seven years have brought events and developments that we may be pardoned if we look upon with some measure of pride, this is the very time to resist the allure to think that further progress will come as a matter of course. This is certainly no time to fold our hands and assume an air of satisfied complacency. Rather is it the moment when, the past encouraging, we must gird up our loins for fresh endeavour; seek to make the Association more and more powerful as representative of the whole profession; and be ready to meet such new demands as the future is sure to make.

Turning from the Association itself and glancing at happenings in the more general field of veterinary science in this country, I have the feeling that the most important feature of the last seven years is the notable development of research. At every period in the history of British veterinary science there have been ardent searchers after truth; but, in the past, they have had to work out their own salvation. One of the most remarkable of these lone enquirers has recently passed from among us, and, though eulogies and appreciations have already appeared, it would be unseemly at a gathering like the present were a tribute not paid to his memory. In the death of Sir Frederick Smith the veterinary profession has lost one of its most striking personalities. From the roll of the Royal College of Veterinary Surgeons will disappear the name of one of her most loyal and illlustrious sons. But the contributions Fred Smith has made to veterinary science will endure. Never seeking personal glory, but always animated by an earnest desire to serve the profession of which he was a member, he added so much to our knowledge that the time has not yet come when a just assessment can be made. Not least will he be held in affectionate and revered memory by those—and they are many—he stimulated and inspired.

That the order of workers to which Sir Frederick Smith belonged will continue is devoutly to be hoped. Indeed, so long as the human mind retains its insatiable curiosity there was never any danger of the order ceasing to exist; but evolution here, as everywhere else, will not be denied. Now the time of organised, correlated, and subsidised research has arrived, and in this, the last seven years have been noteworthy. Since 1922, there has been erected at Cambridge an Institute of Animal Pathology under the able direction of Professor Buxton, to whom this Association owes so much, and in Scotland there has developed an Animal Diseases Research Association with an Institute of its own. Though these Institutes were not the first of their kind, their genesis is none the less significant as showing a growing public aliveness to to the vital importance of research in veterinary science. In affording financial assistance to agricultural and veterinary research institutes the State has shown a welcome, though possibly incomplete, appreciation of the national economic importance of two closely associated sciences.

Though realising to the full the enormous value of the work that research institutes have done, are doing, and may do, there are those who think that a mistake has been made in those instances where the institute is not an integral part of an educational institution. Without endeavouring to prove that research gains

by association with education, emphasis may be laid on the very substantial truth of the converse. It has always been true that the student gains inspiration, and has his mental horizon widened, by living in an atmosphere vivified by the conduct of research ; and it is indisputable that this will always be true. That the teacher, if he is to be more than a machine for the cramming of information into the student, must also live in a like atmosphere is equally true. Those who hold that the close association of research and education must react to the benefit of the profession of the future, stand on very firm ground.

A subsidiary, but still very material advantage arising from the fusion of research and education is the production of research workers of the future. It is not sufficiently recognised that there is an entrancing and fascinating field of work in which the labourers are all too few. And it is possible that the present dearth, in part at least, is due to the fact that many students have no definite knowledge that the field exists.

But these considerations, important though they are, are not the most weighty. What really matters is that veterinary science has taken a place—a comparatively humble one, so far—alongside other sciences in the wide realm of organised research.

One or two more words, by way of interpolation, while on the subject of research ; and the first on behalf of those who are not pathologists or bacteriologists. In human medicine, to a certain extent, and in veterinary medicine, in a much greater degree, the word "research" is far too commonly held as a synonym for enquiry in pathological bacteriology. This is an exceedingly unfortunate conception, and the sooner the saner view that the term embraces *any* enquiry that is likely to add to existing knowledge, or correct current theory, respecting the normal and abnormal structure and function of the animal machine, and much else, the better it will be for everybody. It matters not how useless a secret wrested from nature may appear to be to-day, sooner or later some one will find a use for it.

The second word is this : In research the doubtlessly generally sound principle that he who pays the piper is entitled to call the tune, should not be expected to apply. The piper must be allowed to do his duty in his own way and in his own time : and if the payer, insisting on calling, asking for a reel gets a coronach, he must not be surprised. Patience, and yet more patience, is essential, otherwise the poor harassed research worker is tempted to yield to the clamour for results—and the only lasting result is apt to be disappointment.

Another significant and far-reaching change that has come over the veterinary profession during the last few years is the rapid and remarkable increase in the number of public appointments. For many years, of course, control of contagious diseases of animals has been the duty of the Veterinary Department of the Ministry of Agriculture and Fisheries, and time was when the body of officials of the Department was conspicuously small when compared with the work they were expected to carry out. Those who knew conditions and circumstances, and realised the important relationship between efficient control of disease and prosperity of the animal industry of the country, have been in no way surprised by the number of new appointments that have been made during recentyears.

But enlargement of the veterinary staff of the Ministry of Agriculture, important though it is, does not rank in the list of new developments anywhere so high in significance as does the growth of an army of county and municipal officials. It would be as wearisome as it is unnecessary in this place to review the history of the, at first slow, but lately rapid evolution of the county and municipal veterinary services. It is sufficient to mention the fact in passing, and draw from it the inference that the country has awakened to the essential part veterinary science must play in the efficient protection of the health of the people.

What the future holds none may say, but the veterinary official already forms an essential part of the national machine, carrying out duties, executive and administrative, that are amazing in their diversity. Amazing is not too strong a word. I venture to think there are few members of the profession who can adequately surmise, and still fewer who can actually detail the various Acts and Orders and so on with which the whole body of veterinary officials is concerned.

But, in any review of the past seven years, it is impossible not to make special mention of the great expansion of the Colonial Veterinary Service. It can scarcely be said that the pioneers of the overseas Empire were blind to the essential part that veterinary science must always play in the development of new countries. New countries are naturally pastoral, and the control of animal diseases—especially in tropical and subtropical regions—is a matter of paramount importance. Nevertheless it is only now that a really serious and vigorous effort is being made to build up an adequate Colonial Veterinary Service. And the pity of it is that the effort has come so suddenly that an adequate supply of graduates, suitably trained and properly equipped for the special work involved, is not immediately forthcoming. For many years a certain number of graduates have been provided annually, but those with a desire for a colonial life, and with a willingness to prepare themselves educationally for duty in a service in which knowledge of a special character is needed, have been comparatively few ; and now that the augmentation of the Colonial Veterinary Service has become an urgent necessity, the supply falls much below the demand. As everyone knows, the problem of recruitment for the Service has been made the subject of an enquiry by a special Committee under the chairmanship of Lord Lovat, and the Report recently issued by the Committee—doubtless familiar to all members of the Association—contains recommendations that, if acted upon, can scarcely fail to have a profound effect, not only on the Colonial Service itself, but upon veterinary education generally, and so ultimately upon the veterinary profession as a whole. They will result, it is expected,

in the entry into the profession of an increased number of members of University standing—a result that, I should imagine, few will deprecate ; for if the last few years have made anything clear it is that there is great need for more graduates, and especially for graduates with specialised training.

This brief review of what appear to me to be outstanding features of the past seven years is of necessity very restricted in horizon. No account has been taken of the additions to knowledge that have accumulated and that are of such moment in the science and practice of veterinary medicine and surgery. Steps of no mean magnitude have been made in both medicine and surgery, but to review progress in either would require greater space than is afforded by an address such as the present. Or the steadily growing uneasiness in the matter of bovine tuberculosis might in itself have formed the text for an Address of considerable length. The question, however, is thorny and many-sided and scarcely consonant with the tone of a review of progress. But, if the Government Committee for which the Scottish Chamber of Agriculture is reported to be asking is set up, it should thus be possible to obtain a valuable consensus of opinion, practical and economic as well as academic, upon which to found future action, and furnish one of my successors in the Presidential Chair with an opportunity to report progress.

In brief, taking all in all, and the good with the less good, it would be unreasonable to be other than satisfied with what has happened during recent years ; and there is every indication that the next few years will bring events and developments as striking and as momentous, if not more so. (Loud Applause.)

LIST OF MEMBERS ATTENDING THE CONGRESS.

Dr. O. Charnock Bradley (President), Mr. G. P. Male (President-elect), Dr. J. B. Orr (Hon. Member), Mr. S. E. Abbott, Mr. A. Alexander, Capt. J. Anderson, Major R. G. Anderson, Mr. W. Anderson, Capt. J. Andrew, Capt. E. F. Angler, Mr. R. F. Bain, Mr. D. S. Barbour, Capt. J. R. Barker, Capt. A. Barr, Mr. N. S. Barron, Mr. A. Bate, Mr. G. W. Begg, Mr. Hugh Begg, Mr. H. Bell, Mr. J. G. Bell, Mr. J. Bishop, Mr. W. H. Blackburn, Mr. G. F. Boddie, Mr. H. W. Steele Bodger, Mr. E. C. Bovett, Lt.-Col. H. G. Bowes, Capt. V. Boyle, Mr. G. B. Brook, Mr. W. H. Brooke, Mr. David Brown, Mr. Esmond Brown, Mr. G. G. Brown, Mr. John Brown, Mr. R. E. C. Bullen, Prof. J. B. Buxton, Mr. H. E. Bywater, Mr. J. Caldwell, Capt. D. Campbell, Mr. W. A. Campbell, Major F. Chambers, Capt. H. S. Cockburn, Mr. J. Wright Conchie, Prof. J. F. Craig, Mr. F. J. L. Croudace, Mr. D. Cumming, Major T. Dalling, Mr. F. A. Davidson, Mr. H. J. Dawes (Hon. Secretary), Major J. A. Dixon, Mr. T. Dobie, Capt. J. Donaldson, Major A. Douglas (Local Secretary), Mr. K. D. Downham, Major G. W. Dunkin, Mr. A. Edgar, Mr. J. T. Edwards, Capt. H. S. Elphick, Major R. Finch, Mr. K. A. Forker, Mr. A. B. Forsyth, Capt. J. Fox, Prof. S. H. Gaiger, Mr. W. Gardner, Mr. D. A. Gill (New Zealand), Major D. A. Gillmor, Capt. H. Gillmor, Mr. R. E. Glover, Mr. A. Gofton, Mr. T. N. Gold, Mr. W. S. Gordon, Mr. J. C. Grant, Prof. J. Russell Greig, Capt. O. V. Gunning, Mr. J. F. Healy, Mr. J. Henderson, Mr. C. G. Hill, Principal F. T. G. Hobday, Major T. H. Hobson, Mr. W. F. Howes, Mr. R. Hudson, Mr. D. Imrie, Major T. M. Inglis, Mr. W. J. Ironside, Capt. W. M. Jackson, Mr. D. S. Jack, Mr. R. Ewing Johnston, Mr. T. Johnson, Mr. L. Jordan, Mr. H. C. I. Kelly, Mr. A. J. Kennedy, Capt. W. Kendrick, Mr. Herbert King, Mr. J. M. Lahiri, Mr. W. W. Lang, Mr. A. M. Larnach, Mr. A. Levie, Mr. J. Lindsay, Mr. G. H. Locke, Capt. N. H. MacAlister, Mr. James Macfarlane (Glasgow), Capt. J. Macfarlane (Doune), Major W. A. MacGregor, Mr. W. T. MacGregor, Mr. J. M. McDonald, Capt. A. H. McDougall, Major J. G. McGregor, Mr. J. McDougall, Mr. J. W. McIntosh, Capt. F. McD. Mc Kenzie, Mr. W. S. McMurrich, Mr. J. McQuaker, Major H. F. McVean, Mr. D. L. McWhirter, Mr. C. Masson, Mr. P. Meikle, Mr. W. C. M. Miller, Mr. A. J. Milligan, Mr. R. Mitchell, Prof. W. M. Mitchell, Mr. T. H. Michie, Mr. R. F. Montgomerie, Mr. R. R. Moodie, Mr. G. D. Munro, Mr. W. Nairn, Prof. J. J. O'Connor, Mr. T. Parker, Capt. A. W. Noel Pillers, Mr. R. L. Phillips, Mr. W. A. Pool, Capt. J. E. Pottie, Mr. J. O. Powley, Major D. S. Rabagliati, Lieut. A. G. Ralston (R.A.V.C.), Major G. Rees-Mogg, Mr. R. Renfrew, Capt. J. P. Rice, Mr. W. J. Rice, Capt. J. W. Rider, Mr. J. N. Ritchie, Prof. W. Robb, Mr. C. Roberts, Mr. R. Craig Robinson, Mr. D. B. Rodger, Mr. S. E. Sampson, Mr. G. A. Sangster, Capt. F. C. Scott, Capt. John Scott, Mr. J. K. Shaw, Dr. A. L. Sheather, Mr. A. McK. Sievwright, Capt. R. Simpson, Mr. R. M. Smith, Major A. Spruell, Mr. H. P. Standley, Senr., Mr. H. P. Standley, Junr., Mr. J. Stewart, Capt. Q. A. Stewart, Mr. W. Lyle Stewart, Mr. O. Stinson, Mr. R. Swaby, Capt. J. F. Taylor, Major J. H. Taylor, Major C. W. Townsend, Capt. C. Tracy, Mr. A. C. Urquhart, Capt. J. Waddell, Major W. Walker, Mr. W. L. Weipers, Capt. D. Weir, Capt. G. W. Weir, Dr. A. W. Whitehouse, Mr. T. Wilkinson, Mr. J. W. Wilson, Capt. P. F. Wilson, Mr. W. Woods, Professor G. H. Wooldridge, Capt. A. Young and Mr. W. Jackson Young, together with Mr. C. O. Langley (Solicitor), Mr. F. Knight (Secretary), and Mr. W. Brown (Editorial Representative).

Visitors.

Provost John S. Stewart (Ayr), the Rt. Hon. the Earl of Stair, Hon. G. Corbett, Lt.-Col. W. T. R. Houldsworth, P. A. Thomson (Town Clerk of Ayr), Vice-Convenor John Hunter, Dr. C.A. Bignold (County Medical Officer, Ayr), Dr. Gerald Leighton (Department of Health for Scotland), Dr. R. W. Tuck (United States Veterinary Representative in London), Mr. K. D. Adams, Miss K. Alexander, Mrs. Bailey, Mrs. Barr, Mrs. Begg, Mr. S. L. Black (Sydney), Mr. Hugh Bone (Secretary, Ayrshire Cattle Herd Book Society), Mrs. E. C. Bovett, Miss J. Boyd, Mrs. and Miss Brooke, Mrs. D. Brown, Mrs. J. B. Buxton, Mr. J. C. Buxton, Master A. Buxton, Mrs. Bywater, Mr. and Mrs. J. E. Chilton, Mrs. Conchie, Mr. James Craig, Mrs. D. Cumming, Mr. G. D. Curwain, Mrs. H. J. Dawes,

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NATIONAL VETERINARY MEDICAL ASSOCIATION OF GREAT BRITAIN

GREAT BRITAIN AND IRELAND. AYR CONGRESS, SEPTEMBER, 1929.

[R. Yerbury & Son, Edinburgh.

1929.

Mrs. and Miss Dixon, Mrs. A. Douglas, Mrs. Dunkin, Mr. J. W. Emslie, Mrs. Finch, Mrs. Forsyth, Mr. W. A. C. Fraser (Australia), Mrs. Gardner, Mr. W. O. Gillieson, Mrs. Gillmor, Miss Gooch, Mr. J. Hastings, Mrs. Healy, Mr. and Mrs. R. M. Heywood (Australia), Mrs. C. G. Hill, Mrs. A. A. Hobson, Mr. A. Houston, Mrs. R. Hudson, Mr. J. Hunter, Miss M. Jamieson, Miss E. Johnston, Mr. M. Kamel (Egypt), Mrs. H. C. I. Kelly, Mrs. W. Kendrick, Mr. R. K. Kent, Mr. James Kilpatrick, Mrs. Herbert King, Mrs. Lang, Mrs. Larnach, Dr. Gerald Leighton, Miss D. Lees, Mrs. and Miss Locke, Miss D. Logan, Mrs. MacAlister, Mrs. Jas. Macfarlane, Mrs. McDougall, Miss McIntosh, Mr. J. M. McIntyre, Mrs. McGregor, Mr. L. McLaren, Mr. C. Mackie (Canada), Mrs. R. Mitchell, Mr. A. W. Montgomerie, Mr. and Mrs. J. Murdoch, Mrs. Powley, Mrs. D. S. Rabagliati, Mr. H. Reypallalla (Egypt), Mrs. Chas. Roberts, Mr. H. S. Rudduck (Australia), Mrs. Scott, Mrs. Searle, Mrs. M. G. Smith, Mr. E. C. Sparrow, Mrs. H. P. Standley, Mrs. H. P. Standley, junr., Mrs. Steele-Bodger, Miss Marian Stewart, Mrs. A. A. Stewart, Mrs. J. F. Taylor, Mrs. J. H. Taylor, Mr. George Templeton, Miss S. M. Thomson, Mrs. James Waddell, Mrs. A. W. Whitehouse, Mrs. T. Wilkinson, Mrs. W. Woods, Mrs. G. H. Wooldridge and Mrs. Jackson Young.

Apologies for Absence.

Intimations of regret at their inability to be present were received from the following:—Major Joseph Abson, Mr. J. H. Carter, Mr. E. R. Edwards, Mr. H. Tudor Hughes, Mr. Richard Hughes, Mr. T. Eaton Jones, Major H. Kirk, Major H. G. Lepper, Mr. J. McKinna, Major-General Sir John Moore, Capt. S. J. Motton, Mr. R. B. Nelder, Major H. Peele, Mr. Chas. A. Powell, Capt. J. R. Rider, Mr. H. K. Roberts, Mr. H. L. Roberts, Lt.-Col. P. J. Simpson, Mr. H. Taylor, Capt. W. K. Townson, Mr. T. B. Tutt, Col. G. K. Walker, and Mr. E. Alfred West (Hon. Treasurer).

Discussions on Papers presented to Congress.

Considerations of space prevent us from publishing in this issue, more than the report of the first of the discussions which took place upon the papers presented at Ayr, *viz.*, that upon the paper by Mr. J. O. Powley, Superintending Inspector, Veterinary Department, Ministry of Agriculture, on Foot-and-Mouth Disease, which was opened by Professor S. H. Gaiger, of Liverpool. Immediately succeeding numbers of the *Record* will contain reports of the following discussions *seriatim*:—

On the paper by Prof. J. J. O'Connor (Dublin), "Lameness"—Opener, Mr. J. W. McIntosh (London). On that by Dr. J. B. Orr, (Rowett Research Institute, Aberdeen), "The Mineral Requirements of Farm Animals"—Opener, Prof. J. R. Grieg (Edinburgh). On that by Major G. W. Dunkin (Medical Research Council's Farm Laboratories, Mill Hill), "Johne's Disease"—Opener, Dr. A. L. Sheather (London). On the paper by Principal F. T. G. Hobday (London), "The Clinical and Epidemiological Aspect of Hysteria in the Dog"—Opener, Major Frank Chambers (Wolverhampton).

NATIONAL VETERINARY MEDICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

ANNUAL CONGRESS AT AYR.

On Saturday, August 31st, the Annual Congress of the National Veterinary Medical Association of Great Britain and Ireland opened at Ayr under the presidency of Principal O. Charnock Bradley, of the Royal (Dick) Veterinary College, Edinburgh, when there was a large attendance of delegates from various parts of Great Britain and Ireland, and also from abroad. The proceedings were held in the County Hall, County Buildings, and continued till the following Friday, September 6th. An interesting programme had been arranged for each day, the social side being interwoven with the business one. The local arrangements were in the able and enthusiastic hands of Mr. A. Douglas, veterinary inspector for the County of Ayr. It was the first visit of the Association to Ayr, and the delegates and friends were loud in their praise of the attractions of the ancient and historic town, and highly pleased with the success of the Congress.

ANNUAL GENERAL MEETING.

The forty-seventh Annual General Meeting was held in the County Hall on the afternoon of Saturday, August 31st. The attendance of delegates was smaller than at other gatherings later on, owing to a number of the members of the profession not arriving till the beginning of the following week.

Welcome to Delegates.

At the outset of the meeting, Dr. Bradley (the retiring President) said: My first duty is an extremely pleasant one—to welcome the foreign and other delegates to the Congress. It happens that this year we have a large list of delegates from abroad. We have one delegate from the United States of America, four from Australia, one from New Zealand, two from Egypt, and one from Canada. (Applause.) It is gratifying to us to find that the foreign and other delegates are so numerous, and it is a great pleasure to us to extend to them the very warmest possible welcome. (Applause.)

Thereafter Dr. Bradley delivered his presidential address, which was listened to with rapt attention, and received with prolonged applause. [The address is reproduced at the commencement of this Congress Number of the *Veterinary Record*.—Ed.]

Election of President.

Dr. Bradley: The next business is the election of a president for 1930, and I should like to exercise what is sometimes regarded as the privilege of the retiring president to name his successor. I do so with the confidence and the consent of the Council, and I am sure the delegates will agree to the nomination. I have much pleasure in proposing that Mr. G. P. Male (Reading) be the president for next

year. (Loud Applause.) Mr. Male, I am perfectly sure, needs no introduction to us. (Applause.)

Mr. J. W. McINTOSH: I have great pleasure in seconding the motion.

The CHAIRMAN: If there is no other motion, I declare Mr. Male unanimously elected.

Meeting Place for Next Year.

The SECRETARY: This matter was considered by the Council of the Association, having regard to the fact that the International Veterinary Congress is to be held in London in the summer of 1930. The Council decided to recommend that an annual meeting to comply with the constitution of the Association be held in London prior to the opening of the International Veterinary Congress in August.

The PRESIDENT: You have heard the recommendation of the Council. Will someone move a motion with regard to the matter?

Major G. W. DUNKIN: I have pleasure in moving that the recommendation of the Council be adopted.

Mr. W. JACKSON YOUNG: I have pleasure in seconding the proposal.

The motion was unanimously agreed to.

Thanks to President.

Mr. YOUNG: I do not think we can close the first part of our meeting without thanking Principal Bradley for his interesting and inspiring address. When I listened to what Dr. Bradley said with regard to what has been done during the past seven years, my belief in the value and work of the Association was made stronger than ever. As I have said, it was a most inspiring address, and I am sure that every member of the Association appreciated it very highly. I therefore propose that we award our best thanks to Dr. Bradley. (Applause.)

The PRESIDENT: I have to thank you cordially for this vote of thanks.

Thereafter the meeting was adjourned for fifteen minutes.

ANNUAL REPORT AND BALANCE SHEET.

Upon the resumption of the proceedings, in private session,

The PRESIDENT said: The Annual Report and Balance Sheet are now in your hands, having been printed in the handbook. I shall ask the Secretary to read the Auditors' Certificate, as it appears at the foot of page 34 of the handbook.

(The Secretary read the Certificate).

The Annual Report and Balance Sheet were approved by the Council for presentation to the Annual General Meeting.

The HON. SECRETARY: I move that the meeting receive and adopt the Annual Report and Balance Sheet.

Mr. W. GARDNER: I second that.

The motion was carried unanimously.

ELECTION OF REMAINING OFFICERS.

The PRESIDENT: There are certain recommendations which have been made by this Council, and I will ask the Secretary to read them.

The SECRETARY: At a meeting held this morning the Council agreed to recommend to the Annual General Meeting that the *Vice-Presidents* for the year 1929-30 be as follow: For England and Wales (North), Mr. T. Eaton Jones (for re-election); for England and Wales (South), Col. P. J. Simpson; for Scotland, Mr. N. H. MacAlister (for re-election); and for Ireland, Principal J. F. Craig (for re-election).

The meeting unanimously accepted the recommendations of the Council in this regard, also the following:—

Hon. Secretary: Mr. H J. Dawes, F.R.C.V.S.

Hon. Treasurer: Mr. E. Alfred West, F.R.C.V.S.

Secretary: Mr. F. Knight.

Auditors: Mr. A. D. Wykes, of Messrs. Fairbairn, Wingfield & Wykes.

The PRESIDENT: There are no matters referred to us from the Council, so I pass to the next item on the agenda: "Any other matters that may be properly considered at an Ordinary General Meeting." Has anyone any other matters that may be properly considered?

No observation being made, the President proceeded. "That being so, I move that the meeting be adjourned to 11-30 on Friday, 6th September.

"That is all the business."

PRESENTATION OF HORSE-SHOES.

Mr. W. Jackson Young, F.R.C.V.S., D.V.S.M.(Vict.), has presented to the Royal (Dick) Veterinary College, Edinburgh, a collection of about 600 horse-shoes and many old instruments used by farriers. The shoes are of more than usual interest, as they have been worn in, and were collected from all parts of the world. Several years ago, Mr. Young presented 200 horse shoes to the Veterinary College, Glasgow, and a similar number to the "Dick" College and equipped the shoeing forge at the latter institution.

ARMY VETERINARY SERVICE.—MOVEMENTS OF OFFICERS.

Major R. F. Bett proceeded from the Northern Command to Aldershot for duty, on the 12th September, 1929.

Major C. J. R. Lawrence, O.B.E., is at present in this country on leave from Egypt.

THE LONDON WELSH CAPTAIN.

"T. E. Jones-Davies, who is shortly to become a student at the Royal Veterinary College, will this season captain the London Welsh Rugby Club, says "Polaris" in *The Star*.

"Jones-Davies, like Bartlett, found the obtaining of a Blue at Cambridge just beyond his power. Nevertheless, he is a player of the very highest order, and last season was reserve in most of the Welsh Internationals.

"The illness of Windsor Lewis has given the new London Welsh skipper the position of outside-half in the Ba Ba side which play Hampshire on Saturday at Southampton. Few distinctions in club Rugby give a player higher satisfaction than a place in the Ba Ba side.

"Jones-Davies is equally at home either as wing, centre, or outside half, and the London Welsh are fortunate in their selection of captain, following upon the resignation of the office by W. A. V. Thomas."

CEREMONIAL EVENTS.

One of the most gratifying features of the Congress was the whole-hearted welcome received by the members from the townsfolk of the Ancient and Royal Burgh of Ayr, as represented by their civic dignitaries. The two notable events in this connection with which we propose to deal in this section, are the Sunday morning service and the Civic Welcome. The report of the Banquet, at which the county and burgh authorities were also strongly represented, appears in our account of the social events.

Service in Ayr Old Parish Church.

On Sunday forenoon the members of the Congress assembled at the Municipal Buildings and, accompanied by the Provost, Magistrates, and Councillors, and preceded by the Burgh Halberdiers wearing their red coats and carrying their halberds, walked to the historic building which dates back to Cromwellian times, and towards the cost of which Oliver Cromwell gave a grant of 1000 merks (Scots), in view of the fact that he had commandeered the church of St. John's in which the succession to the Scottish Crown was settled the year after the battle of Bannockburn in 1314. The preacher was the Rev. W. Phin Gillieson, M.C., M.A., minister of the first charge of the parish of Ayr, and Principal Bradley, from the choir seats, read the Scripture lessons. The Provost, Magistrates, and Councillors were accommodated with seats in the Merchants' Gallery, and along with them were the Burgh Officials, while the delegates to the Congress were provided with seats in the area of the church. The delegates showed much interest in the old colours of the Territorial Regiment, the Royal Scots Fusiliers, and the memorials of the Great War affixed to the walls of the church.

The Scripture lessons were from Job and St. Matthew, and Mr. Gillieson took his text from Romans viii, 19: "For the earnest expectation of the creature waiteth for the manifestation of the sons of God." In the course of an interesting and eloquent sermon, Mr. Gillieson said that benevolence towards animals was all very well, but there was something wrong with the sense of proportion which meted out the same treatment to a child as it did to a cat—the treatment which allowed a tenth of the population to be reared in the dark slums of great cities where there was not sufficient light, air, and space; which denied to the people suitable food and shelter, and where the sanitary facilities were of the most inadequate character. He did not wish to suggest that their domestic pets should be neglected or that their necessary requirements should be overlooked, but it seemed absurd and contrary to the spirit of Christ that in many cases they should be doing more for the prevention of disease amongst animals than improving the homes of a large section of the population. What was the use of tuberculin-tested milk in a filthy den? There was such a thing as the sense of proportion. Those attending the Congress of the National Veterinary Medical Association of Great Britain and Ireland should be encouraged by every means available to the public. Let them show an interest in their labours and promote their efforts as they had opportunity. Let them try to take the full benefit of these labours by preparing the ground for their fruit. Not in veterinary science alone but in all the sciences progress would be ten times faster than it was if men and women would open their hearts and their pockets along with every new light in science.

Mr. William Newsome officiated at the organ, and the choir rendered the sacred music very beautifully. The congregation was an impressive and representative one. Large numbers of people lined the streets to witness the procession to and from the Town Hall.

Civic Welcome.

On Monday morning a civic welcome was accorded by Provost Stewart, Ayr, and the Vice-Convener of the county, ex-Provost Hunter, Old Cumnock. Principal Bradley presided over a large attendance of the delegates and others.

Provost STEWART said: Mr. President, ladies and gentlemen, I am delighted to see you here this morning and to think that you have got such very fine weather at the start, and it is to be hoped that the propitious weather conditions will continue. If you had come here last week your impression of Ayr would have been different, owing to the rainfall at that time. On behalf of the Corporation of Ayr, I extend to you a hearty welcome, and I hope that your sojourn here will be a pleasant and profitable one. I see from your programme that you have had, and are to have, a number of outings, which are not complete unless you get fine weather. I also note from the programme that a large number of papers are to be read at your Congress, and I have no doubt that these papers and the discussion on them will be a great benefit to you and to the different communities which you represent. A large number of conferences are held in Ayr, and I am pleased to say we always give such conferences a cordial welcome, because we know that the delegates must leave something in the town. (Laughter and applause.) I see that one of the subjects on your programme is foot-and-mouth disease. I remember that half a century ago foot-and-mouth disease was very prevalent in Ayrshire, and that the way to deal with the trouble was to pare a little bit off the cow's feet and paint these with tar. I have no doubt that as the result of research in these modern days a different method of treatment has been found by veterinary science. I hope that your sojourn in Ayr will be a happy one, and that you will carry from it pleasant memories, and perhaps return at a future time. (Applause.)

Ex-Provost HUNTER said: I am sure it is a deep disappointment to everyone that Mr. Harling Turner, the Convener of the county, is not with us this morning. He has been doing the work of two or three men these many months, and this morning he left on a well-earned holiday. To me it is a matter of gratification that I am associated with the Provost of the Royal Burgh of Ayr in bidding you welcome

to our county with all its attractions and privileges. Congratulations are due to all concerned for the admirable manner in which your business has been arranged and carried out. The way in which things are done seems to me to be the perfection of management. I see that in your association you have over 1,600 members drawn from a very wide area, and that you are doing a most beneficent work. Your work has been very well defined as the art of healing the diseases of domestic animals. That is a very simple and terse definition. As Ayrshire is a stock-raising county, we are specially interested in your work, and on behalf of the county I have very great pleasure in giving you a very hearty welcome. With regard to research work, you are doing all that is possible; but I think the Government are lacking in the grants they give for such purposes. (Applause.) An appeal should be made for sufficient money for this very worthy and necessary purpose. I think the veterinary colleges, so far as Scotland is concerned, are being starved; and in my opinion they require more support in order to put them upon a more satisfactory footing. Governments are always sympathetic, but they do not do enough for the veterinary colleges. We have got a Government in power that may do more than has been done in the past for such places. It gives me great pleasure to be here to-day, and I hope that your visits to well-known farms and historic places in the county will be both interesting and profitable. May the sun shine upon you. I trust you will have no cause to regret your visit to this county which you have honoured by holding your forty-seventh annual congress in the county town. (Applause.)

The PRESIDENT: I know quite well that I shall be heartily supported by my fellow members when I say we wish to thank you in as hearty a manner as we can for your sunny welcome, and we trust your wish for sunshine may be fulfilled. I need hardly say that the Association is more than glad to be in Ayr, and I do not think I am disclosing any secret when I say that the competition for the place of meeting this year by the Association was between an English town and a Scottish town. As an Englishman domiciled in Scotland, it was very gratifying to find that there was an overwhelming majority in favour of the northern town. (Applause.) The reason why there should have been a majority in favour of Ayr was not far to seek, because many of the members of the Association, and particularly those domiciled south of the Tweed, wished to see this particular part of Scotland. There were many reasons why they should do so. In the first place, they wished to make acquaintance with the agriculture of the district, and to visit this land of witchery and romance. (Applause.) They desired to see a part of Scotland with which the history-makers were particularly associated—the land of Wallace and Bruce, and, not least, the land of Robert Burns. (Applause.) I need say no more than this, that words are inadequate to express our thanks for the very warm and sunny welcome that has been

(*Continued at foot of next column*).

THE SOCIAL SIDE.

Although the weather poorly seconded the efforts of the Provisional Committee to ensure that the social aspect of the Congress should leave nothing to be desired, the splendid programme of outings and gatherings which had been arranged was carried through without interruption, and yielded a measure of enjoyment and interest which will long be remembered with gratitude and delight.

Those who were able to participate in the proceedings of the opening day found their social proclivities admirably catered for by the provision of a whist drive and dance at Western House, Craigie Road, Ayr, which is the club house of the Western Meeting (Ayr Races). A thoroughly enjoyable time was spent by a large company, who were most appreciative of the dance music provided by the Arcadians Amateur Dance Band, which was recently organised by Mr. R. Ewing Johnston, of Belfast. This amateur band has achieved a high level of efficiency, and the following are the members, who are as enthusiastic as they are talented in the performance of their self-imposed task of "playing for the enjoyment of it." *Piano*, Miss Joyce Boyd; *Banjos*, Miss E. Ewing Johnston and Miss D. Lees; *Drums*, Mr. K. D. Adams; *Saxophones*, Mr. R. Ewing Johnston, M.R.C.V.S., D.V.S.M.

The company were also greatly indebted to Mr. Walter Gardner, M.R.C.V.S., of Maybole, who, by special request, supplied, at the piano, the music for the Scotch reels. These contributions, which were brilliantly executed, evoked much applause.

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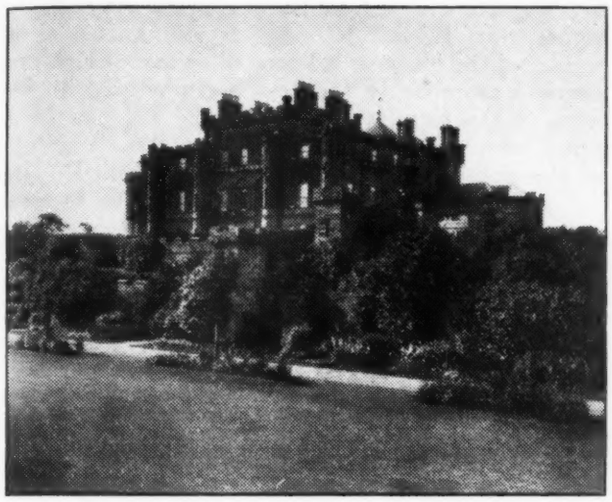
Visit to Culzean Castle.

On Sunday afternoon about 120 delegates and others enjoyed a visit to Culzean Castle, the stately and picturesque residence of the Marquis and Marchioness of Ailsa. That day the Marquis celebrated his 82nd birthday. The four 'buses which conveyed the party passed on the outward journey the Croy Brae, the peculiarities of which have been the subject of controversy for many years. The motor 'buses were brought to a standstill on what appeared to be a declivity, yet when the engines had been stopped the vehicles moved slowly backwards. One set of people assert that the brae is an electric one and interferes with the compasses of vessels passing up and down the Firth of Clyde, while others contend that it is an optical illusion. On arrival at Culzean the visitors were shown through the gardens by Mr. Orr, head gardener, and other objects of interest in the policies were also noted. The beauty of the gardens and the handsome

(*Continued from previous column*).

extended to us by the Provost of Ayr and the Vice-Convener of the county of Ayr. (Loud Applause.)

Provost STEWART: On behalf of ex-Provost Hunter and also on my own behalf, I have to thank you. I hope that as many as possible will come to the Burns shrines at Alloway and be for a short time the guests of the Corporation. (Applause.)



proportions of the castle, with the magnificent view of the sea from the lawns, were much admired. On the homeward route the party had a view of the ancient abbey of Crossraguel, and the Kirkoswald churchyard, in the latter of which are buried a number of people immortalised by the national poet, whose mother and other relatives belonged to the parish of Kirkoswald, and who for a short time attended Hugh Rodger's school in the village. The village of Alloway was also passed through on the way to Ayr. During the afternoon tea was partaken of in Turnberry Hotel.

CULZEAN CASTLE AND ITS OWNER.
(*Contributed.*)

When the National Veterinary Medical Association of Great Britain and Ireland visited Culzean Castle on Sunday—an ideal first of September day—the Marquis and Marchioness of Ailsa had not the pleasure of meeting them, owing to the fact that his lordship and her ladyship were from home at the time, but they had given instructions that the large company were to be shown through the lovely gardens and policies and everything of interest pointed out to them. The delegates to the Congress and their lady friends, particularly those from England, were greatly impressed by the beautiful proportions of the castle erected on a precipitous cliff by the famous Robert Adam, one of the greatest architects and designers of any time. To the south-west they saw the rock of Ailsa, to the west the rugged peaks of Arran, and to the north the hills of Argyllshire. The old cannons on the edge of the lawns near the castle attracted a good deal of attention, and in the gardens the foreign shrubs and plants were also the subject of favourable comment. The policies of Culzean form one of the Paradises of Ayrshire and of the westland generally; and the lord of the manor is one of the most highly esteemed noblemen in Scotland at the present day. In the woods of Culzean are numerous trees of fine proportions, and to the writer one of the delegates from Glasgow pointed out what he said were foreign firs of more than ordinary interest. So extensive are the woods of Culzean that one runs the risk of losing oneself for the time being in his wanderings "far from the madding crowd" and the haunts of men. However, we all successfully "sprauchled up the brae" to our conveyances, and were loth to leave these secluded places for the gaiety and abandon of Turnberry, where we found later in the day arrangements being made for the customary dance on Sunday night. I suppose that in the matter of Sunday observance we are expected to march with the times, yet it is difficult for the old fashioned Scots to assimilate the new notions about the way in which the first day of the week should be spent. Outside the hotel we found that some of the popular pastimes were being indulged in. In the hotel, I visited the swimming pool, one of the best adjuncts of the palatial building. There is mixed bathing in the pool, and the water is from the sea. No wonder Turnberry is popular. The hotel is one of the best managed places of the kind in Scotland, the catering is excellent, and the comfort of the guests is ministered to in every possible way. If "siller" will give you the sesame to these Elysian fields by the shores of the Clyde, then Turnberry is the last word in that respect. Congratulations have been extended from far and near to Lord Ailsa on the attainment of his 82nd birthday. Archibald Kennedy is the third Marquis, and one of the grand old men of Ayrshire. Everybody has a good word for him. He is so unassuming, so kind-hearted, so obliging, and so active in serving his King and Country in diverse ways that you cannot help admiring this scion of a noble house. He is always happiest in his Carrick home amongst the people who know the strength of his character and his record of public service. Ayrshire has never had a more highly esteemed Lord Lieutenant. He has an intimate knowledge of the sea and of shipbuilding. As a yachtsman his name has been familiar to the public for many years. In all his activities he is warmly supported by Lady Ailsa.

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Outing to Alloway.

After the civic welcome the delegates and their friends were, on the invitation of the Ayr Town Council, entertained to tea and a programme of music in the tea gardens by the lovely Banks o' Doon. An orchestra, under the leadership of Bailie W. G. Burgoyne, discoursed a short programme of popular pieces, and a well-known vocalist contributed a number of songs, well suited to so wistfully charming a setting. At the tea, which was admirably purveyed by Mrs. Bowden, the chair was occupied by Provost Stewart, who extended to the company a cordial welcome. Principal Bradley, on behalf of the Association, returned thanks to the Corporation of Ayr for their hospitality, which, he said, they heartily appreciated. Thereafter visits were paid by the members of the company to the Auld Brig o' Doon, the Burns Monument, the auld kirkyard of Alloway, and the cottage in which the poet Burns was born. Special tramway cars conveyed the party to and from Alloway, and the arrangements of Mr. William Grant, tramway manager, were all that could be desired.

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ON THE BANKS O' DOON, BELOW THE BURNS' MEMORIAL.

The President's Reception.

By Monday evening the attendance at Congress had reached its complement, and the spacious accommodation at Western House was taxed to the uttermost for the President's reception: the social occasion of the week. The evening proved quite memorably enjoyable, for everything possible was done for the entertainment of the host of guests, and the function admirably fulfilled its primary object of providing an opportunity for meeting old friends and making new ones. The size of the attendance was, at the same time, a striking tribute to the affectionate esteem in which Dr. Bradley is held by the members of the Association.

The Arcadians Dance Band was again in splendid form in providing a long programme of music for the subsequent dance, and the evening's enjoyment was greatly enhanced by the singing of Miss Mabel Jamieson, a well-known local contralto, with Miss E. McIntyre, of Ayr, as accompanist, while Piper McLean, of Newmilns, who received honours at the bagpipe competition recently held at the Cowal Gathering in Argyllshire, contributed selections of stirring music.

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Visits to Well-known Farms.

Despite the complete breakdown in the weather on Tuesday afternoon, a considerable number of the delegates paid visits to Mr. James Kilpatrick's Clydesdale stud at Craigie Mains, near Kilmarnock, and Colonel Norman Kennedy's herd of Aberdeen-Angus cattle at Doonholm, Alloway. The name of Mr. Kilpatrick is a familiar one in the Clydesdale world, while Colonel Kennedy is well known as a breeder of the black-polled type of animals which are regarded as probably the best beef-producers to be found in this country. The pedigree stock at both farms was a source of much interest to the delegates, all the notable animals being much admired. Mr. Kilpatrick's name was associated with the famous horse, "Baron o' Buchlyvie," which was sold in the Ayr Cattle Market many years ago for the record price of 9,500 guineas. The animal was the subject of litigation in the Court of Session, Edinburgh, and the House of Lords. Colonel Kennedy's father, the late Mr. James Kennedy, timber importer, Glasgow, founded the herd at Doonholm which, under the careful management of the herdsman, Mr. John Grant, has become one of the chief herds in Scotland.

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Dramatic Entertainment.

In the Y.M.C.A. Hall, High Street, on Tuesday night, the Ayr Amateur Players produced four one-act plays to a crowded and enthusiastic audience, the proceeds being on behalf of the Victoria Veterinary Benevolent Fund. The plays were "The Price of Coal," by Harold Brighouse; "The Highwayman," by Justin H. McCarthy; "The Wooin' o't," by W. D. Cocker; and "Rosalind," by J. M. Barrie. Those who took part were Misses Helen M. Wallace, Phemie B McIntyre, Jean Hunter, Marion A. McCrorie, Nettie Turner, and Helen Murray, and Messrs. Jack Davidson, J. J. Simpson, R. B. Wyllie, and Campbell McGregor, all of whom acquitted themselves in a most praiseworthy manner. Two of the pieces are in the Scots dialect, *viz.*, "The Price of Coal," and "The Wooin' o't," and deal with the homely life of the working classes. At intervals a band of ladies and gentlemen discoursed selections from the works of well-known composers. The productions did credit to everyone concerned and provided an excellent entertainment.

Towards the close of the evening, Principal Bradley, accompanied by Colonel W. T. R. Houldsworth, of Kirkbride, mounted the stage, and said it was very seldom he had a duty so pleasant as the one entrusted to him that night. On their behalf, he had to ask Colonel Houldsworth, the president of the Ayr Amateur Players, to accept their thanks for that extremely enjoyable evening. In these days there was a decay in dramatic art, which was to be regretted; and it was declared that the talking pictures would be the last nail in its coffin. He thought that as long as they had artistes of the ability of the Ayr Amateur Players dramatic art was in no danger. (Applause.) As the result of the efforts of the players, the Victoria Veterinary Benevolent Fund would, he hoped, benefit considerably. They were also very grateful to the members of the orchestra for their selections.

Colonel Houldsworth said he desired, on behalf of the Ayr Amateur Players, to acknowledge the very cordial vote of thanks which has been proposed by Principal Bradley. He might explain that at the beginning of this year the Players asked him to become their president. Before he accepted, he made

inquiries and found that his duties would not be very onerous. One stipulation was that he should not appear upon the stage. (Laughter.) He was sure it had been a great privilege to the Ayr Amateur Players to appear before such a distinguished and enthusiastic audience. When his friend, Major Douglas, showed him the other day the programme of the visit of the Veterinary Association to Ayr, he was very much impressed with the great variety of the items which appeared upon it, and the very skilful way in which the more serious business of the Congress was interspersed with matters of a lighter kind. On behalf of the Players, he could only express the hope that the Victoria Benevolent Fund would benefit by the entertainment, and that the visitors would have pleasant memories of the town and county of Ayr, if not of the weather. (Hear, hear, and applause.) He trusted that as a result of their stay in Ayr they would be able to confirm the truth of the couplet—

" Auld Ayr wham ne'er a toon surpasses
For honest men and bonnie lasses." (Applause.)

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The Banquet.

A Brilliant Gathering.

Veterinary Science and Agriculture.

The annual banquet of the National Veterinary Medical Association of Great Britain and Ireland was held in the Ayr Town Hall on Wednesday night, September 4th, when there was an attendance of about 220 ladies and gentlemen. Principal O. Charnock Bradley, President of the Association, who presided, had on his right the Earl of Stair, Lochinch, Castle Kennedy, Stranraer, an ex-Lord High Commissioner to the General Assembly of the Church of Scotland; and the Hon. Godfrey Corbett, of Rowallan Castle, Ayrshire, who is the President of the Ayrshire Cattle Herd Book Society, and a notable breeder of pedigree Ayrshire cattle. Others at the Chairman's table were Colonel W. T. R. Houldsworth, of Kirkbride, Maybole; Colonel Norman Kennedy, of Doonholm, Alloway; Provost and Mrs. Stewart, Ayr; Mr .H. J. Dawes and Mrs. Dawes, Major G. W. Dunkin, Miss McIntosh, Mr. William Robb, Professor J. J. O'Connor, Dr. J. Parlane Kinloch, Rev. W. Phin Gillieson and Mrs. Gillieson; Professor J. S. Craig, London; Dr. R. W. Tuck, London (U.S.A.); and Captain R. H. Heywood, London (Commonwealth of Australia).

After a splendid repast, the Chairman gave " The King," which was enthusiastically pledged.

The Chairman: At the risk of incurring the displeasure of Mr. David Brown and his Committee, I am going to propose a toast not mentioned upon the card. I think that when Mr. Brown and his Committee hear the toast I am going to propose, I shall be forgiven. Upon this particular occasion we must drink the health of our patron—(applause)—so I give you " His Royal Highness the Prince of Wales."

The toast was cordially honoured.

The Chairman: In the unavoidable and regrettable absence of Mr. Male, I have to ask Mr. Noel Pillers to propose the toast of " The Royal Burgh and County of Ayr."

Ayr's Ancient History.

In giving the toast, Mr. Pillers said: This afternoon I was shown a telegram stating that Mr. Male would be unable to attend—I am sure we all regret his absence from our annual dinner. (Hear, hear.)

I have received several suggestions by an Ayrshire man with regard to this toast. If you disagree with what I say, you can blame him. (Laughter and applause.) With regard to the town and county of Ayr, the people of this part of Scotland have every reason to be proud of them. Burns has sung many of its attractions, and here let me say that one of the reasons which prompted me to come north was the desire to see the Land of Burns. (Applause.) It is strange that Burns has very little to say about the sea, or Ayr Bay, or the rugged cliffs of the Ayrshire coast—perhaps they did not appeal to him. Sir William Wallace spent much of his time in this district, and many of his exploits took place here. King Robert the Bruce, I understand, after many disappointments, started his campaign at Turnberry for the liberation of Scotland, and that campaign culminated at Bannockburn. There are other associations which are very important in history: Ayrshire gave to Scotland its race of Stuart kings. In Scottish literature Burns looms very large. I suppose you claim Burns all to yourselves, but I want to remind you that some of us have enjoyed many of his poems and songs and have also pledged " The Immortal Memory." (Applause.) In " Auld Lang Syne " Burns gives the soul of the Scottish people; but that song is not confined to Scotland—it is sung at gatherings in all parts of the world. Then, George Douglas Brown, the author of that remarkable novel, " The House with the Green Shutters," was another notable Ayrshire man. In the world of agriculture Ayrshire cattle take a foremost place—Ayrshire has produced a cow which is known the world over. You have many famous Clydesdale horses in this part of Scotland; we have all heard of Craigie Mains and Dunure Mains. Many of the best early potatoes are grown upon the Ayrshire coast. The capital of Ayrshire has a history which goes back seven hundred years. Time has dealt harshly with some of its ancient structures, but there still remain the " Auld Brig " and other interesting relics. (Applause.) Speaking as a member from the south, I have to say that we have enjoyed ourselves very much indeed at this Congress. We appreciated the service in the Old Parish Church of Ayr on Sunday morning, especially the sermon by your padre. Your hospitality has been upon a generous scale. (Applause.) We admired the scenery at Doonholm, on the banks of the river Doon, and wondered why Scotsmen ever left their native land. (Laughter.) The ladies of our party enjoyed their visit to the Newton Carpet Works. If you ask us to return to Ayr, I am sure that we shall avail ourselves of the opportunity to renew our acquaintance with it. (Applause.)

Provost Stewart, in replying to the toast, said: I wish to thank you for the very cordial way in which

you have pledged this toast, and I also desire to thank Mr. Pillers for what he has said regarding the town and county of Ayr. Ayr is a very old town. It is the third oldest royal burgh in Scotland—it got its royal charter from William the Lion in 1202. The people of Ayr always say, after returning from a holiday, that in their opinion there is no place to be compared with their own town. I am glad to say that Ayrshire is one of the counties in Scotland that is self-supporting. A number of counties in Great Britain are not in the happy position of being able to say that. We have the best farms in Scotland, also the best breed of cattle; the Ayrshire cattle are known in all parts of the world. A year or two ago while in Edmonton, Canada, I found more people looking at the Ayrshires than at any other breed in the showyard. The town of Ayr has got a beautiful setting; in and near it you have the rivers Ayr and Doon entering the sea. Burns has sung their praises in imperishable verse. From the Bay of Ayr you have a magnificent view of Arran upon a clear day. Some of the greatest men in the world have been associated with Ayrshire: I refer to Wallace, Bruce, and Burns. (Applause.) Oliver Cromwell, too, was here. He took possession of the Parish Church—the Church of St. John the Baptist—and converted it into an armoury, and around it he built a great fort or citadel, a large part of the walls of which remain. Only the tower of the Church of St. John exists. In that church the succession to the Scottish Crown was settled in 1315—the year after the battle of Bannockburn. In lieu of the Church of St. John, Oliver Cromwell gave a grant of money towards the cost of erecting the present Old Church of Ayr in which you worshipped last Sunday with the Provost, Magistrates, and Councillors. The Auld Brig of Ayr is still to the fore and visited by people from all parts of the world. The late Lord Rosebery re-opened it after preservative work upon it had been carried out which cost many thousands of pounds. We have got carpet works, shoe factories, lace works, and other industries in the town and county. I hope that you will carry away pleasant memories of your visit to Ayrshire, and return to it upon a future occasion. (Applause.)

Unity Essential to Progress.

The Hon. Godfrey Corbett proposed "The National Veterinary Medical Association." He said: I wondered why I had been asked to propose this toast, and I remembered that I had the honour this year of being appointed president of the Ayrshire Cattle Herd Book Society. My wife asked me: "Are you doing anything on Wednesday night?" and I said I had an engagement at the annual dinner at Ayr of the National Veterinary Medical Association of Great Britain and Ireland. Nobody but a teetotaller would propose this toast. (Laughter.) I feel particularly honoured in being asked to propose the toast, especially after the able paper read yesterday by Professor Buxton on "Tuberculin Testing." The question of tuberculosis in cattle has been given anxious and careful consideration by me for a number of years. We in Ayrshire realise that the future of the dairy industry depends almost entirely upon the success of the veterinary profession on two matters, *viz.*, the reduction of tuberculosis and the control of contagious abortion. We realise that it is through the veterinary profession we are going to attain these ends. (Applause.)

I am informed that this Association was founded in 1882, but it is since the war that it has witnessed its greatest prosperity and usefulness, and to-day it has a membership of over 1,600. I think it is recognised that associations cannot hope to reach their greatest efficiency unless they make an appeal outside their own immediate localities. The local associations and the Divisional associations have done excellent work; but it is only since they formed a national body, and pooled their resources and energies that we have had veterinary progress. (Applause.) To-day there is a higher standard of veterinary knowledge and education. A medical man asks a patient "How are you feeling to-day?" and he may be told that the patient is feeling pain in a certain part of his body, but an animal cannot tell the veterinary surgeon where the pain is in its case. However, it can express its disapproval when you start to meddle with it. (Laughter.) Mr. Forbes, of Kilmarnock, is in a position to tell you that we have a cow which starts to sharpen its horns when it hears the sound of his motor car. (Laughter.) She has also a knowledge of where she should be when she is in the showyard. (Laughter.) I may say that she has been in every showyard in Ayrshire for the last fourteen years. Last year while she was being led round the ring she disapproved of it so much that the man leading the cow next to her said "You should go home and teach your cow how to walk." (Laughter.)

I am sure those present will agree with me in saying that research and advance in veterinary science depends upon the work of the general veterinary practitioner. (Applause.) He can see in his everyday work symptoms and peculiarities of different diseases; and it is by reporting these and forming conclusions thereon that progress can be made. All progress in veterinary science springs from small beginnings, and it is through studying symptoms and peculiarities of diseases that the research worker can collect particulars with regard to a cure or a palliative.

We have heard a lot about Ayr to-night. I think the Veterinary Association of Great Britain and Ireland are to be congratulated on their wisdom in coming to the West of Scotland after an interval of nearly thirty years. I understand that golf courses are a very important matter in connection with such congresses. (Laughter.) I do not think you will find a finer golfing country anywhere than on the Ayrshire coast. (Applause.) For miles and miles there are splendid courses, and I hope that you have enjoyed your play over them. We have been delighted to learn that one of your number has described the Ayrshire cow as the greatest cow in the world. (Applause.) Personally, I was pleased to hear that statement, because I have

been under the impression that her merits are not properly recognised in some places. I desire to congratulate the Congress upon having had Professor Bradley in the chair. I have had the privilege of serving on a committee in Edinburgh with Dr. Bradley, and I am sure you could not have had a better president or one better qualified to look after the interests of the Association. (Applause.) I would like to say, on behalf of the breeders whose herds you are visiting on Friday, how delighted they will be to see you, and extend to you every hospitality in their power. (Applause.)

The PRESIDENT, in responding to the toast, said, "I should have very much preferred that Mr. Corbett had said something with which I could not agree and that we could have come to a mild form of verbal warfare. As it is, I cordially agree with all that he has said. Strictly speaking, my reply should end by saying, "Thank you very much," and sitting down. I suppose that would not be proper. His reference to the history of the Association—short though that reference was—reminds me that I have a text handy for a reply, if I like to use it. The text is this—we are now in the extremely proud position to say that we have made a record in the matter of attendance at any Congress of the National Veterinary Medical Association (applause); and you may realise how very proud, satisfied, and megalocephalic. (Laughter.) —Lord Stair says, 'That wins it'—the people of Scotland have become since this fact was known. At the same time, I think we should pause just a little and remember that we are reaping—gratefully reaping —the fruits sown long ago; and it has occurred to me that we should think of those pioneers of 46 years ago who met together in a very informal and small way and produced the National Veterinary Medical Association. (Applause.) That thought leads me to another—a thought tinged by a certain amount of shame—and that is that we as an Association have not as yet any form of memorial to the memory of the man who did more than any other for us, I refer to William Hunting. (Applause.) I should like to throw out a hint to my successor in office, or a successor at any other time, that this Association should set up a permanent memorial in some form or another to him.

I should like to assure the proposer of this toast that we are extremely grateful for the eulogistic terms in which it was proposed, and that we are not in the least unmindful of our duty towards agriculture, and that the efforts of the Association—and by that I mean the efforts of all the practitioners of veterinary science in this country—will be directed towards the solution of problems which I hope will redound to the good of agriculture. (Applause.) Probably one of the first problems to be considered by the Association—indeed, it has already been considered by us—is the important one of the eradication of tuberculosis. (Applause.) I do not think I can say anything further than to thank Mr. Corbett for the way in which he proposed the toast. It is impossible adequately to express my gratitude, and I feel that my gratitude is yours. (Applause.)

"AGRICULTURE."

Major G. W. DUNKIN, who submitted the toast of "Agriculture," said: When I look back over the past years of my relatively short but not entirely unchequered career, I can remember no occasion when I could, with honesty and truthfulness, have admitted that the time would come when I could say that it would give me great pleasure to make or attempt to make an after dinner speech. That, however, is the position in which I find myself this evening and I hope that the little I am going to say will in some measure be beneficial to our hard pressed industry, Agriculture.

In spite of certain qualms which I have as to my ability adequately to deal with this important toast, these are insufficient wholly to destroy that pleasure which I have already said I have.

It is an established fact beyond dispute that this world in which we live is entirely dependant upon Agriculture and upon the results of its labours. Britishers are, or should be, even more interested in the progress of Agriculture than other nationals, because its freedom from embarrassment, financial and otherwise, means so much to this country. Veterinarians particularly, perhaps more than any other body of people, take a lively interest in this industry, possibly because, individually, they come into contact with farmers more than others and realise the tremendous difficulties with which they have to contend.

I have been much struck by some of the speeches which have been made at the recently held Pan-African Agricultural Congress, but particularly with the statement made by the President, Sir Robert Grieg, in his Presidential Address. He said, "The true wealth of the world, the wealth which determines the standard of living of nations, is limited by the capacity to produce cereals, milk, meat, hides, wool, cotton and other prime necessities arising from the soil." This, in a sentence, explains very fully the great importance of Agriculture to a nation. (Applause.)

This year has been remarkable in many ways, but in particular the unusual drought has caused the farmer much extra worry and has cost him not a little. With all the worries he has, the general public would like to see the farmer get his fair share of the profits from the materials he produces, but I fear this is not the case.

I doubt very much whether there is a single industry which has received more sympathy but for which so little has been done, and the old time joke that the British farmer is a born grouser can well be understood. Yet, with it all, the farmer knows how to carry his troubles and, in this respect at least, can teach some of us a lesson. The old story, which I fear will be a chestnut with some of you, of the farmer's son, is evidence of this: The little lad was writing a letter to his schoolmate and was discussing agriculture. He said, "Father says that this year will be a serious one for farmers. Father says that ruin stares farmers

in the face. Father says that when ruin stares him in the face he stares back and buys a motor car." (Laughter and applause.)

I ask you to rise and drink with me the toast "Agriculture" and I couple it with the name of Col. Houldsworth.

Colonel HOULDSWORTH responded in the following terms: I feel honoured here to-night in being called upon to respond to this toast, which has been so ably proposed by Major Dunkin and so cordially received by you all. While I am fully conscious of the honour conferred upon me, I am afraid that I am unable to thank you adequately and to do justice to the theme. Might I point out to my teetotal friend upon the right (Hon. Mr. Corbett) that he is not the only one who can say National Veterinary Medical Association of Great Britain and Ireland. (Laughter.)

The toast of "Agriculture" should find a prominent and honoured position at gatherings of this kind, for the relationship between the veterinary profession and agriculturists is a very natural and close one. I do not feel prepared to-night to take upon myself the responsibility of voicing the views of my brother agriculturists, some of whom are here as your guests. We agriculturists recognise and appreciate the great work carried on by your profession. In connection with the difficulties, troubles, and losses with which we have to contend in carrying on the very precarious occupation of farming, we look to your profession for light, guidance, and assistance. The successful results obtained in the great field of research, especially those relating to animals, have given us a prospect of healthier herds, diminished losses, and better returns for our farms. As everyone knows, agriculture has been passing through, and is still passing through, very difficult times. It takes the average farmer all his time to discover the silver lining which is said to be behind every cloud. After a life largely devoted to agriculture, I have discovered that farming is a very pleasant occupation, one in which you can gain a great deal of experience and lose a great deal of money. (Laughter.) I was brought up to think that a farmer was a man who could make two blades of grass grow where only one grew before, and upon the same principle I assumed that a good dairy farmer was one who could produce two gallons of milk from the cow which produced only one gallon before. (Applause.) I venture to say it is less difficult for the farmer to-day to accomplish that achievement than it is to find a ready and remunerative market for his produce. It is not so much a question of production as a question of finding a ready market for his produce. (Applause.) In seeking remedies for our troubles we are often advised not to put too much confidence upon Government assistance. I am not talking politics to-night; I am not referring to the present Government or to past Governments. I am sure the farmers of this country do not wish too much Government interference, and that we do not wish to see agriculture made the plaything of politicians. (Hear, hear.) Having been born in Scotland I have no objection to Government assistance if given to us in the form of grants of money. (Laughter.) I do not think the Government could do better than give liberal grants in connection with the diseases of animals and diseases affecting farm crops. (Applause.) We know that a great deal has been done in the way of research, but much yet remains to be done. There is no fear of unemployment for those engaged in research work so long as money can be found to carry it on. (Applause.) I would suggest that if there is any money available from the Government, they might give it to the dairy farmer to clean up his herd and get rid of the tuberculous cow in the country. (Hear, hear.) We know that very few farmers can face the expense of tuberculin-testing their herds and disposing of the reactors. You all know the slogan, "Drink more milk." If what I have suggested were done, the slogan would carry more weight and meet with more success at the hands of the general public. We should then have a consumption of milk more in proportion to that of other countries. When I refer to milk, I mean milk from the cow, and not imported powders which flood the country. If these suggestions were carried out, we might find milk and not whisky becoming the national drink of Scotland. (Applause.)

THE GUESTS.

Professor WILLIAM ROBB, Glasgow, gave "The Guests." My first duty, he said, is to express to our guests our pleasure in having them with us to-night. If I were to enter into some of the public work which some of these gentlemen have done, the Congress would have to begin again. The Earl of Stair might give us a paper on how the Ayrshire cow is to get on without her horns in the wilds of Canada. (Laughter.) The other guests, such as the Hon. Godfrey Corbett, Colonel Houldsworth, and Colonel Kennedy, might be sympathetic, knowing some of the troubles and trials we have in carrying out our work. We have also with us distinguished members of our profession. Mr. James Kilpatrick, of Craigie Mains, could have given us a paper on the question whether a veterinary surgeon is the proper person to examine stallions in order to grant a certificate, or whether the breeder himself should not grant his own certificate. (Laughter.) Finally, I come to Dr. J. Parlane Kinloch, Chief Medical Officer in Scotland of the Local Government Board. I have never met the doctor until to-night, but I know the reputation he established for himself at Aberdeen. Like many Medical Officers, he worked in perfect harmony there with the medical profession (Hear, hear, and applause.) When he left the city of Aberdeen he left many sore hearts. (Applause.) However, the people wished him every success in his higher sphere of labour. Dr. Kinloch believes that there should be collaboration of the two professions, if there is to be a solution and eradication of some of the diseases communicable from animals to man. (Applause.) I have pleasure in coupling this toast with the name of Dr. Kinloch.

Dr. KINLOCH, in the course of his remarks in reply, said: You have put me in rather an awkward

position, because when I came to this great gathering to-night I was warned that I must be very careful in what I said. I, as you know, have long been associated with local government work. I have watched the development of the great health services of this country and I have had an invaluable experience of that kind of work. I have found the veterinary profession providing a service second to none. (Applause) You have entered into the local government service somewhat late, and for that reason you have an opportunity of doing work which some of the older branches of the profession had difficulty in doing. To-day the central department is being advised by the best veterinary brains in Scotland. The contribution which you can make to medicine and public health in the future is unlimited. To-day England and Scotland have a system of meat inspection second to none. There is a great chapter of health in the new Local Government Act for England and Wales (Applause.) In my opinion, within the next four years we shall see a health organisation in this country infinitely greater than what has been produced during the past twenty years.

Mr. H. C. I. Kelly submitted the toast of "The Ladies." He stated that there was a good opening in the veterinary profession for ladies. He had always thought it would be very nice to have a lady pupil (laughter). It was quite possible that in a few years the fair sex would have a strong foothold in their profession.

Miss Marian Stewart replied in felicitous terms.

During the evening Mr. James W. Senior's trio presented an attractive programme of instrumental music, while songs were tastefully rendered by the Misses Forbes Brown and Mr. McNeillie.

The catering was in the efficient hands of the Western Contracting Company, Ayr, and the Town Hall was artistically decorated with flowers and shrubs for the occasion

The proceedings at the dinner terminated, in the time-honoured manner, with the singing of "Auld Lang Syne" and the National Anthem.

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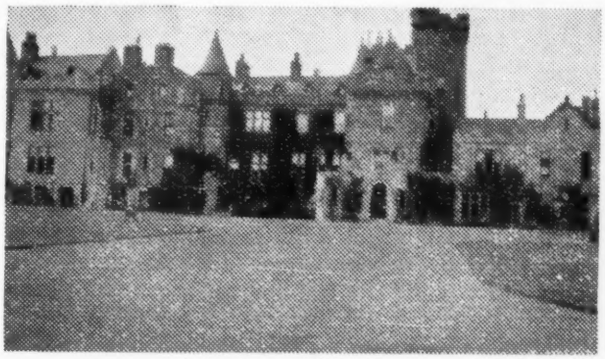
Excursion to Glenapp.

One of the most enjoyable and successful excursions was that on Thursday, September 5th, to Glenapp Castle, Ballantrae, the Scottish seat of the Earl of Inchcape, who was not in residence at the time the party journed thither. Five large 'buses and about a dozen private motor cars were required to carry the party to and from their destination. On arrival, Mr. Taylor, the head gardener, showed the visitors through the beautifully kept gardens. Glenapp Castle has been largely added to since Lord Inchape—who was Mr. James Mackay, a native of Arbroath—became the owner of the estate. During the anxious years of the Great War his lordship and other prominent men in the service of the country held conferences at Glenapp which had far-reaching effects. On the outward journey the visitors went by way of Dailly, Pinmore, and Colmonell, and returned to the county town by the shore road.



Glenapp Castle.

The run home by the shore was taken in order to give the delegates and friends a view of the Firth of Clyde and the island of Arran, but, unfortunately, a haze hung over the placid waters. Before leaving for Ayr, tea was served at the castle by the tenant of the Ardstinchar Hotel, Ballantrae. Glenapp is beautifully wooded, and the roads and estate cottages are all in first-class order. The loveliness of these woods and the air of serenity that pervades them must be very acceptable to Lord Inchcape. Glenapp is, in a very real sense, a haven of rest to the great brain that controls the P. & O. concerns.

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Visit to Dairy Farms.

On Friday afternoon members of the Congress, at the invitation of the Ayrshire County Council, visited several farms where Certified or Grade A (T.T.) milk is produced from herds of pedigree Ayrshire Stock. The farms were:—Carnell, Hurlford—Mr. George Templeton; Rowallan near Kilmarnock—Hon. Godfrey Corbett; Greenan, near Ayr—Mr. Quinton Dunlop; Threave, Kirkmichael—Lieutenant-Colonel W. T. R. Houldsworth; Lessnessock, Ochiltree—Mr. A. W. Montgomerie; Brae of Auchendrane, near Ayr—Mr. W. J. Thomson. Colonel Houldsworth, Mr. Corbett, and Mr. Thomson entertained the parties to tea. At all the farms the members were shown the stock and the buildings in which the milk was produced, and everything was greatly admired.

The concluding event of the social programme, and indeed of the whole Congress, was a highly-successful social evening, at Western House, on the Friday. The gathering was largely attended, and the programme of whist, dancing, etc., was thoroughly enjoyed.

At the concluding whist drive, the prizes (which were given by the new President, Mr. Male), were won by Miss Hendrie and Mr. Hugh Begg.

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Visit to Newton Carpet Works.

In addition to being welcome participants in all the outings and social functions, the ladies had an additional fixture of their own, when, to the number of about fifty, they paid a most interesting visit to the Newton

Carpet Works of Messrs. W. C. Gray and Sons, Ltd., on the forenoon of Wednesday, 4th September.

Under the guidance of Mr. McCrorie, the works manager, a tour of the works was made and the visitors had an opportunity of seeing, step by step, the many stages in the manufacture of carpets from the raw undyed yarn to the finished article.

At the close of the tour of the factory many beautiful carpets of unusual design were shown, and before leaving, Mrs. Dawes, on behalf of the ladies, thanked Messrs. Gray and Sons for having received the party and Mr. McCrorie for the trouble he had taken in explaining the various processes to them and for having made their visit so interesting.

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Congress Golf Competition.

Many members and visitors took advantage of the permission granted to them by the Ayr Town Council to play over the Corporation Courses at Belleisle, on any day during the Congress, on presentation of a Congress badge, and also of the facilities afforded for playing over the championship and the St. Nicholas courses at Prestwick.

Twenty-six competitors took part in a stroke competition over Belleisle No. 1 course on Monday, 2nd September.

The best scores were J. O. Powley (6) 75, D. L. McWhirter (16) 75, F. Chambers (11) 78, R. Simpson (16), 80, R. Ewing Johnston (16) 83, K. A. Forker (16) 83, G. Warnock Begg (15) 84.

By arrangement, the tie between Mr. Powley and Mr. McWhirter was played off over the Prestwick championship course by match play on Wednesday, 4th September, when Mr. Powley, who was giving his opponent 8 strokes, won by 3 and 2.

Mr. Powley accordingly won the Silver Quaich, presented by Dr. Bradley, Mr. McWhirter taking the second prize, presented by Captain R. Simpson, while Mr. Powley also took the prize for the best scratch score with 81, which is one stroke over bogey.

In this round of 81 Mr. Powley had no fewer than four "birdies."

From The Veterinarian, March, 1829.

We stop the press, and somewhat inconveniently disarrange our matter, to state a rumour which has just reached us, and from a source on which we can place much reliance, that the competent authorities at the Veterinary College have determined to enforce a longer residence at that school by every pupil.

An attendance of at least twelve months, it is said, will be exacted from every student, although he may be the son of a farrier or veterinary surgeon, or may have served an apprenticeship to either, and an attendance of two years by him who has not possessed this previous and most important advantage.

We announce this with pleasure and gratitude. The insufficient education of the veterinary surgeon has been the main cause of our present lamentable degradation. The country has been inundated by those who knew not

(*Continued at foot of next column.*)

"Operations Day."

Successful Surgery and Demonstrations.

The policy of the Provisional Committee of the Ayr gathering in devoting a whole day to so essential and valuable a feature of a veterinary congress as operations and demonstrations, met with the wholehearted approval of all present, and the event fully justified their belief not only in its success, but in its inevitability, if a programme worthy of the occasion is to be followed through without undue haste for the operators and without that overlapping which, in the past, has proved so severe a handicap to enthusiastic spectators.

As a consequence, a programme of unprecedented proportions was presented and performed without a hitch, strict adherence being made to a carefully-prepared time-table. Two admirable theatres were provided, *viz.*, in the Horse Repository at the Cattle Market and in the Sheep Ring close by, and early on the morning of Wednesday, September 4th, both presented a busy scene as the operators made their preparations and the keenest spectators took up points of vantage from which to view the proceedings.

Median Neurectomy.

The surgical programme commenced promptly at 10 o'clock, when, in the Sheep Ring, Capt. W. M. Mitchell, M.C., M.B., Ch.B., B.Sc. (Edin.), Professor of Surgery and Obstetrics at the Royal (Dick) Veterinary College, Edinburgh, performed the operation of median neurectomy.

The actual exposure and removal of a portion of the median nerve were in accordance with the usual procedure. Professor Mitchell's aim in doing this operation was to obtain first-intention healing, and to this end he took special care to prevent any infection of the operation wound throughout. The skin

(*Continued from previous column.*)

the principles, and had never seen the practice, of their profession.

This concession to public opinion is gratifying and honourable. We regard it as the harbinger of a new and happier era in the history of the veterinary art. Let the professors, or the governors, or even the examiners (angry as we are at present with these last gentlemen), begin to evince a disposition to vindicate the honour and consult the true interests of that profession in which we have embarked our hopes and fortunes, and every hostile demonstration, every unfriendly feeling, will on our part, for ever cease. These gentlemen shall have the credit of kindly conceding that which we might justly and sternly demand, and our feeble voice of approbation shall mark and cheer their progress.

We might well say, a few pages back, and when we dreamed not of this, that we were satisfied with the prospect before us; and well might "A Farrier" tell us, that a power was rapidly growing which would defy all opposition to its will, *viz.*, the voice of an enlightened and united profession.

We shall await watchfully yet not distrustfully, anxiously but not impatiently, the progress of events. In the meantime, we will tell this "farrier" that a path is opened to true and lasting popularity, which they who are wise will pursue.

was shaved the night before and the area painted with tinct. iodi after the horse was cast and anæsthetised. About 15 minutes before casting, the horse was given 10 drachms chloral hydrate in two gallons of water per stomach tube and about three ounces of chloroform then sufficed to complete the operation.

A large sterile holland cloth, with adjustable window, was fixed by towel clips so as to provide a sterile field for the operator and his assistant, both of whom had previously carefully prepared their hands by washing in solutions of liq. cresol. sap. and biniodide of mercury and donned sterile gowns and caps. The incision in the posterior superficial pectoral muscle was closed by three interrupted catgut sutures and the skin by closely-placed interrupted silkworm gut.

By preventing infection of the wound two main advantages are gained :—

(*a*) The animal is saved much suffering from infection, particularly when it gains access to the connective tissue below the deep fascia of the forearm.

(*b*) At the end of a fortnight a horse can often start work, thus saving a week or more of idleness.

Mr. W. L. Weipers ably acted as assistant, and Mr. J. N. Ritchie maintained a perfect anæsthesia. To both gentlemen Professor Mitchell, who supplied the above notes, desires to express his deep indebtedness.

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Udder Injection for Prevention of Mastitis.

Meanwhile, in the Horse Repository, Mr. J. Brown, F.R.C.V.S., of Invergordon, had been interesting a large number of spectators by demonstrating his injection of the udder for the prevention of mastitis in dry cows.

The object of the procedure is to prevent summer mastitis in dry cows and in-calf heifers, injection being made into the quarters whenever the cow is "dry." The injection is made with a special syringe, which Mr. Brown exhibited, and the fluid remains in the quarters till the cow is milked out, thus preventing germs from getting up the teats to the quarters.

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The Crucial Incision Operation.

At the same venue, Mr. Oscar Stinson, M.R.C.V.S., of Appleby, followed with the now noted operation associated with his name. The subject for this operation was a second calved cow. She was giving very little milk from the affected quarter and was approaching the end of lactation. The sphincter had been partially occluded from the beginning of the first lactation, resulting from a wart on the end of the teat. The operation was performed with ease, the teat end being anæsthetised with ethyl chloride by spraying for ten seconds from a distance of about nine inches. The indication that the teat end was anæsthetised was the blanching of the skin. The operation was performed as previously described in the *Record*; the quarter was relieved of the milk, the operation wounds dressed with carbolic ointment, and bandaged.

The operator writes: "The case was ideal for the operation, actually, but as the quarter was giving very little milk there is the probability that the milk will not be sufficient to keep the teat end open until properly healed; that being the case, it would be necessary to repeat it at the beginning of the next lactation."

Mr. Stinson explained the operation at every stage, and emphasised that it was necessary to continue to incise until the milk came very freely from the quarter. Great interest was shown by the members, and several stated that they had performed the operation many times successfully.

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Caponising of Cockerels.

This operation, by Mr. F. J. L. Croudace, M.R.C.V.S., of Corbridge-on-Tyne, shared with that just described the honour of finding a place on the Congress programme for the second year in succession—a tribute to the very great interest both have created. Mr. Croudace, who was again very busily employed in caponising a large number of birds, favoured us last year with a very comprehensive series of notes concerning the operation and the conditions governing its performance, and we would refer our readers to pages 815 and 816 of our issue of September 29th, 1928 (Vol. VIII, No. 39) for his most instructive account.

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Firing Tendons (Standing Position) under Local Anæsthesia.

Before the commencement of the second operation in the Sheep Ring, Mr. E. F. Angler, M.R.C.V.S., of Doncaster, was already busy in the Repository with the first of the two duties allotted him. Mr. Angler's notes on the process of tendon firing (standing) under local anæsthesia are as follows :—

"In firing a horse in the standing position, the only restraint I use is the twitch, and if the animal is nervous I employ, in addition, a stable rubber to cover his eyes. Then, if the tendons are to be fired, I inject 3 c.c. of a 5 per cent. solution of cocaine over the course of the external and internal plantar nerves at a point just below the knee joint. In ten minutes' time the part is completely anæsthetised and ready for firing.

"The hair must be clipped from the part to be operated upon and also brushed or washed if the skin is dirty and scaly. In my experience, I have found that deep point firing is much more beneficial than line firing. I always blister immediately after firing for two reasons :—(1) Stimulation of the reparative process into greater activity; (2) Relief from the acute pain while the anæsthetic lasts. If the swelling is intense twelve to twenty-four hours after firing and blistering, then smear with carbolised oil and dress with dry dressing."

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Operation for Poll Evil.

Promptly at 11-30 a.m., the Sheep Ring Theatre was ready for the above operation, which was performed by Professor J. J. O'Connor, M.R.C.V.S., of the Veterinary College of Ireland, Dublin, who favours us with the following notes :—

Subject.—An aged black Clydesdale mare.

History.—Over twelve months ago a swelling appeared on the near side of the poll and has been gradually increasing in size. It never showed acute inflammation and did not burst. The only treatment adopted was the application of absorbent topics. Surgical intervention had not been resorted to. The chief trouble of the lesion was its interference with the fit of the bridle, which caused irritation by pressing on the swelling.

Symptoms.—A prominent tissue swelling confined entirely to the near side of the poll. Its superficial outline resembled somewhat in shape and size the convex aspect of a longitidunal section of an average melon. It was slightly sensitive to the touch.

Remarks.—Professor O'Connor quoted the history of the case and said that the lesion appeared to be of the nature of a cyst or chronic bursitis and that the diagnosis might be confirmed by an exploratory puncture by means of a trocar and canula. Treatment by aspiration of the fluid and the injection of tincture of iodine might be adopted, but would require repetition, be tedious, and probably prove disappointing as the cyst usually contained rugiform bodies which would remain *in situ* and prevent reduction of the swelling. The best treatment would be to incise the swelling, completely evacuate its contents and destroy or dissect out the lining of the cavity.

He had had a similar case several years ago and microscopic examination of some of the tissue removed revealed necrosis, although no bacteria could be found. Although this case was not a typical poll evil he thought it would be best to proceed as if it were, *i.e.*, to make a mesial incision extending from the front of the occipital crest to a point behind the posterior limit of the swelling, open the cavity to ascertain its limits, remove its lining and excise the involved portion of the ligamentum nuchæ by cutting it obliquely downwards and forwards posteriorly, dissecting it forwards and cutting it off clean from its insertion into the occipital crest.

Operation.—The mare received 1½ oz. of chloral through the stomach tube and was cast on straw, covered with a tarpaulin. Chloroform was administered by means of Cox's muzzle. The mane was clipped and the site of operation shaved and painted with tincture of iodine. The head was supported on a pillow formed by a tightly filled sack of hay saturated with a solution of lysol. The procedure was in accordance with the preliminary remarks. On opening the swelling a thin yellowish liquid, containing what appeared to be particles of fibrin, escaped. The cavity extended from the occiput backwards for a distance of about 18 inches, extending beneath the funicular portion of the ligamentum nuchæ posteriorly and involving part of its thickness. Its lining had a dark red granular appearance. This lining was dissected out from behind forwards and removed. During the dissection several fairly large vessels were encountered which bled profusely, the blood escaping with great force. These were secured by artery forceps. The funicular portion of the ligamentum nuchæ was then severed obliquely downwards and forwards behind the affected part, dissected forwards and separated from its insertion into the occipital crest by cutting close to the bone.

The resulting wound was larger than usual, on account of the complete removal of the lining of the cyst, which extended further back than was indicated by the outward appearance of the lesion. A couple of the larger vessels held by the forceps were ligatured. The cavity was dressed with tincture of iodine and packed with gauze, which was kept in position by interrupted tape sutures. The operator was ably assisted by Messrs, Duncan, Weipers and Elphick.

The patient got up soon afterwards and was led to her box.

Thanks are due to Messrs. Willows, Francis, Butler and Thompson for supplying chloroform, cotton wool, and gauze *ad lib.*

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Intravenous Injection.

Meanwhile, in the other theatre, Messrs. J. Macfarlane and R. Mitchell, of Glasgow, were busy showing how medicated fluids in quantity can be introduced into the blood stream by intrafusion. The demonstrators say :—

"The apparatus consists of a silverised steel needle about two inches long and of wide bore, fitted into a thick rubber tube of similar bore and about 18 inches long. Into the other end of the rubber is fitted 18 inches of tinned lead tubing and both connections tied with silk thread. The apparatus is sterilised by boiling for five minutes immediately before use and the fluid to be used is raised to blood heat by insertion in a pail of warm water. The horse's neck is wiped clean with disinfectant solution, and the immediate site of operation over the jugular vein is clipped bare and painted with tincture of iodine.

"The animal is twitched as a precautionary measure, then the vein is raised by pressure of the thumb of the left hand and the needle, point outwards, is plunged into the centre of the vein longitudinally and downwards. When the blood is flowing freely from the distal end of the lead tube it is inserted into the bottle containing the medicated fluid and, as the bottle is raised to the level of the horse's head, the pressure on the jugular vein is removed. The 40 ounces of fluid used in this demonstration took ten minutes to syphon away. The fluid used was normal saline solution, to which had been added :—

Sol. formaldehyde, two drams.
Potass. iodide, one and a half drams.
Spts. of camphor (pure), one and a half drams.

"The treatment is useful in cases of purpura hæmorrhagica and in pneumonia, and can be repeated in from three to four days. The horse used for the demonstration was suffering from grass sickness in the chronic form."

Mr. Mitchell, who planned and perfected the apparatus used, has arranged with Messrs. C. J. Hewlett and Son, Ltd., of London, to supply it to members of the profession.

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Removal of a Displaced Third Pre-molar Tooth.

Mr. Oscar Stinson skilfully—we might truthfully say heroically—performed a most formidable operation for the above condition, which kept him, and a host of interested spectators, incarcerated in the Sheep Ring for the whole of the afternoon, from which quarters he emerged triumphant and in time for the Banquet.

The subject of this operation, which was a three-year-old half-bred mare, had been affected since she was nine months old. Briefly, the symptoms were as follows: In the beginning there was considerable swelling over the frontal and maxillary sinuses of the near side, causing the patient to walk in circles when feeding from the ground, probably the result of pain. The swelling was intermittent, as was a nasal discharge from that side. When exercised the breathing was distressed and although she had been broken in she was useless. There was evidence of obstruction of the nostril when walking. At the time of the operation there was a hard swelling in the region of the inferior maxillary sinus.

The patient was chloroformed after being thrown on to the off side. The skin was cleansed with Tr. iodi, friction being used. The third pre-molar was thought to be the tooth affected and a piece of bone over the normal position of the middle of the tooth was removed. It was found that there was a formative ostitis, to the thickness of three-quarters of an inch, indicating that the tooth was very considerably displaced. The upper two-thirds of the tooth were exposed by removing three other pieces of bone with the trephine and bone forceps. Extensive formative bone was curetted, including the alveolar septum between the second and third tooth. In probing down to the crown of the tooth a pocket of grass, to the amount of a dessertspoonful, was found very tightly packed between the temporary and permanent tooth; this was evacuated and the temporary tooth extracted. The permanent tooth was cut into two pieces in the middle, the lower half being repelled into the mouth. The upper half was taken out through the opening made in the superior maxillary bone.

On examining the tooth and bone, after the operation, the condition can be defined as follows: The third pre-molar tooth appeared to have followed the line of least resistance as the result of extensive formative ostitis of the outer surface of the superior maxillary bone and the septum between the second and third pre-molar teeth; as a result, the root of the third pre-molar tooth was very much displaced and actually causing an obstruction of the nostril by exerting pressure on the nasal portion of the superior maxillary bone and causing it to bulge into the air passage. The formative ostitis appears to be the result of irritation caused by a pocket of grass found wedged between the temporary and permanent tooth, very tightly packed. The operation took about two and three-quarter hours and was successful.

Mr. Stinson, to whom we are indebted for the above account, adds: "The radiant heat lamp exhibited at the Congress by Messrs. Arnold and Sons, was directed on to the seat of the operation and was of great assistance. For the use of this and the special instruments loaned for the operation by the above instrument makers, the operator wishes to convey his best thanks. He is also greatly indebted to Capt. O. V. Gunning, of Tutbury, for the safe maintenance of prolonged anæsthesia."

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Ether and Oxygen Anæsthesia.

A most interesting feature of the programme was a demonstration of the use of ether and oxygen as an anæsthetic for dogs by Mr. E. F. Angler, who writes, "For the past five years I have used ether and oxygen as a general anæsthetic and I am now satisfied that it is the safest anæsthetic for the smaller animals, as ether is much less toxic than chloroform. It is well known that under all anæsthetics the patient is sub-oxygenated, therefore it is a great advantage to add oxygen to the anæsthetic vapour.

"In the administration of the ether and oxygen I use a mask which contains an expiratory valve, which prevents dilution with air. Re-breathing takes place in the mask to a certain extent, but this is an advantage, because it stimulates the respiratory centre and diminishes shock by preventing acidosis.

"I prefer an injection of morphia before the administration of the anæsthetic for two reasons: (1) Prevention of physical shock: (2) Prevention of psychical shock.

"Some animals are very timid and an operation is disturbing, and it is due to this excessive fear that the patient is placed in a position of considerable danger when it is submitted to an anæsthetic—therefore morphia is a safeguard.

"The apparatus for the administration of ether and oxygen consists of a mask, an ether container and an oxygen cylinder with a Pinson gauge and valve. The ether container is fitted with a rubber cork in which two metal tubes are inserted—one tube extending into the depth of the ether, while the other only extends about half-an-inch beyond the lower surface of the rubber cork. The latter tube is connected to the mask by means of a piece of rubber tubing, while the other tube (which penetrates the ether) is connected in a similar way to the oxygen cylinder. When the patient is secured and the apparatus fixed, all that is necessary is to turn on the oxygen at a slow rate to begin with, and then gradually increase it if necessary. It the patient has had an injection of morphia previous to the administration of the ether and oxygen, then it will be completely under the influence of the anæsthetic in less than one minute, whereas, without the injection of morphia, it takes about five minutes to anæsthetise the patient.

"The patient can be kept under the anæsthetic for an indefinite period without any ill effects."

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Operation for Entropium in the Dog.

Principal F. T. G. Hobday, Royal Veterinary College, London, was responsible for the successful performance of this operation.

The patient was an Airedale, male, about three years old, kindly provided by Major Chambers, the subject of entropium, requiring surgical interference in the upper and lower eyelids of the left eye at the outer canthus; and the upper eyelid of the right eye.

Mr Angler anæsthetised the animal with the oxygen and ether method and Professor Hobday excised an elliptical portion of the skin of the eyelid at the necessary spot in each eyelid; two of the wounds being sutured with fine silk and the third wound being intentionally left open.

A lotion of boric acid and zinc was prescribed for application twice daily and it was surmised that if all went off well the stitches ought to be ready for removal in seven or eight days.

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Collection of Blood samples.

Principal A. W. Whitehouse demonstrated a method which he had found convenient for intravenous injection of chloral when preparing cattle for dissection and which, he suggested, might be suitable for the collection of blood samples for the agglutination test in dairy cattle.

The cow being restrained sufficiently to prevent her kicking the operator, the subcutaneous abdominal (milk) vein is traced forward to its foramen through the rectus abdominis muscle (the milk well). This foramen being well located, the skin is picked up in the left hand, and a strong intravenous needle pushed through it with the right. The milk well is again joined with the forefinger of the left hand, which is pressed into the well and retained there, and the needle is pushed along the forefinger with the right. If blood does not at once flow the needle has penetrated too deeply and blood comes as it is withdrawn.

Opportunity was taken to demonstrate an Egyptian method of minor restraint described in the *Veterinary Journal* in about 1906.

This method, which is very simple, requires two attendants and two light poles such as pitch fork handles.

The poles are crossed underneath the cow in front of the udder and of the tuber coxæ and each attendant presses his pole upward and into the flank with his shoulder. This usually prevents kicking and fairly well immobilises the hind quarters.

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Tuberculin Test Demonstration.

Early in the day Mr. R. E. Glover, of Cambridge, gave a greatly appreciated demonstration of the carrying out of the double-intradermal tuberculin test, the subjects being one bull and four cows.

The results of the tests were as follow:—

	Initial Skin Measurement Sensitising Dose.	48H. Diagnostic Dose.	72H.	Result.
Bull	16	20	27 D.H.T.	Reactor
No. 1	7	12	20 D.H.T.	Reactor
No. 2	5	18 S.D.	24 D.H.T.	Reactor
No. 3	7	19 D.H.T.	20 D.H.T.	Reactor
No. 4	6	15 S.D.H.	22 D.H.T.	Reactor

Material was taken from each of the above animals and submitted to microscopic examination. Tubercle bacilli were found in every case.

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Meat Inspection Demonstration.

In the late afternoon the members proceeded to the Public Abattoir, where Mr. A. Gofton gave a demonstration on meat inspection.

The material provided for the demonstration comprised the four cows and one bull which had been previously subjected to the double-intradermal tuberculin test and had reacted. The lesions which were present in each case were shown in detail and a systematic examination was made of the visceral and carcase lymphatic glands. The location of the carcase lymphatic glands was demonstrated.

At the conclusion of the demonstration, the members present accorded a vote of thanks to the Superintendent of the slaughterhouse, for the excellent arrangements which he had made for the purpose of the demonstration.

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Exhibition of Morbid Specimens.

Throughout the day a very interesting and comprehensive collection of morbid specimens was on view in the Horse Repository, Messrs. Frank Chambers (Wolverhampton), and James Macfarlane (Glasgow), together with the Glasgow Veterinary College Pathology Staff, combining to stage a most informative exhibition.

Mr. James Macfarlane has favoured us with the following description of his specimens:—

Exhibit No. 1. Double fracture of the lower jaw in front of the molar teeth, and the apparatus planned to effect re-union of the bones.

Subject.—A seven-year-old pedigreed Clydesdale mare, bought from a dealer on 19th July, 1928. The *apparatus* consisted of a casing of aluminium shaped to the lower jaw, cup-shaped in front to take in the lower lip, and held in position by straps and a special bit which fitted on to

the first molar teeth, cleared the frænum of the tongue and the "wicks" of the mouth, and was screwed on to the aluminium plate.

Cause of Accident. On the 18th October, 1928, (a very wet and windy day), this mare was standing unattended, yoked to her lorry, in a side street, when she moved away, and on entering the main street collided with a Corporation bus and was afterwards able to walk home to her stable, 300 yards away.

Her injuries were extensive, and included a fractured skull and double fracture of the lower jaw. First thoughts were to destroy her, but as she was a big, good, young pedigreed mare, standing quiet and not suffering much pain, I decided to try and set the jaw. I did not attend her at first, but moved her across the stable later on in the evening, so that she could be put in slings, and though the muscles of the near fore leg were badly swollen she moved freely and put weight on her leg. The mare gradually lost the power of extending the leg, which caused me to make a close inspection of it. I heard crepitation of the bones and, on probing the wound with my finger, felt the rough edges of bone, so had her destroyed.

The fracture of the radius was a star one, and the piece of the condyle exhibited looks as if it had been chipped off with a cleaver. The fracture of the skull was small and did not interfere with the meninges or brain. I think the jaw would have healed, only it was split horizontally as well as vertically.

The mare drank fluids freely, and we fed her on oatmeal balls, made up with eggs or treacle. On *post mortem*, it was surprising to find so much oatmeal in her stomach, and she did not lose much condition during the ten days she was under treatment.

EXHIBIT No. 2. Complete anchylosis of the 1st and 2nd cervical vertebræ. Fused atlas and axis bones of a horse, with normal ones alongside.

Subject.—A grey (Army Surplus) Percheron Gyp gelding, age 11 years. He was hauling his load in a steady stream of uphill traffic, when a jamb occurred in the traffic and this horse's head got fixed on a bag of sugar. He collapsed, hitting the poll of his head on the curb-stone of the pavement. He was able to walk home to his stable a mile away.

Treatment.—Put in slings in a loose-box, given repeated intravenous injection of 2½ drams of liq. extract of cannabis indica in the first fourteen days. Ice applied to poll. Nose kept almost touching the ground at first, but gradually resumed normal po-ition, except that he always had a "kink" in his neck, but walked and trotted sound. There was considerable swelling of the parts at first, and it looked as if the swelling would burst, but it slowly reabsorbed. He was blistered several times and given a summer's grass, and afterwards worked regularly for two years until he become stiff at rising, when he was destroyed.

EXHIBIT No. 3. The coffin joint of a horse suffering from open joint caused by a picked up nail. Destroyed after three months' treatment.

Subject.—A Black Clydesdale gelding, 10 years old. The animal was kept on because he made a good patient, and previously had been a great worker.

I have had several remarkable cures of open pedal joints with injections of ether biniodide lotion (a saturated solution). The whole joint surfaces were completely eroded away. The navicular bone was entirely roughened and had the appearance of having been rolled out flat. The os corona showed considerable exostosis and this applied also to the wings of the pedal bone.

EXHIBIT No. 4. Foundered fore feet of a Shire seven-year-old gelding, showing descent and penetration of the soles. The subject was ill three weeks, and died from the rupture of a blood-vessel in his right lung. He got down latterly and was unable to rise and take his feet even with the aid of slings.

The other two coffin bones are from a case of chronic founder that had to be destroyed, and are exhibited to show the absorption and alteration in shape that had taken place.

EXHIBIT No. 5. Not a *post-mortem* specimen, but a "keratoma," removed from the inside quarter of a fore foot about two years ago. After a month's treatment, the animal returned to work and has been working ever since.

In this case suppuration had set in, pus was commencing to appear at the hoof head, and the animal was lame.

Keratomas, even after removal in this manner, grow again, but they can be prevented from interfering with the animal's usefulness if, at each shoeing, they are pared and hollowed out to prevent them bearing weight or opening up. Put on a sole and stuff with tar.

Mr. ROBERT MITCHELL, M.R.C.V.S., of Shaftesbury Street, Cranstonhill, Glasgow, exhibited the following veterinary instruments of his own design and invention:—

A probe-pointed firing iron.—So constructed that six to eight punctures can be made without reheating, and the depth punctured can be varied from ¼in. to 1½ins.

A mouth gag for horses.— To give the operator every freedom while exploring and working in the mouth, and a certainty that it will not collapse until released, which can be done simply and quickly.

A molar extractor.—Unique in that it consists of a long single tube, taking up little space in the mouth, and is of great power, which is increased by the addition of a sliding fulcrum to be moved and pressed against the opposing molar tooth.

Lastly, Mr. Mitchell exhibited a *tooth key*, made by his grandfather, for extracting any of the first four molar teeth, top or under. This is a very effective, simple and powerful instrument which can be adjusted to varying sizes of teeth.

Anyone wishing to obtain further particulars of the foregoing can have them by direct application to Mr. Mitchell.

Approximately 200 distinct species of insects are either directly or indirectly associated with and responsible for the occurrence of disease in man and other animals. It is not possible accurately to estimate the economic loss incident to these pests, but it is safe to say that their annual toll amounts to hundreds of millions of dollars.—*Veterinary Medicine.*

SECTION OF VETERINARY STATE MEDICINE.

Discussion on Graded Milk Nomenclature.

On Wednesday, September 4, the Section of the Congress relating to Veterinary State Medicine, met to discuss "The Nomenclature employed in the Milk (Special Designations) Orders." Mr. A. W. Noel Pillers presided, and Mr. R. Simpson, Chief Veterinary Officer for the County of Cumberland, opened the discussion.

Mr. SIMPSON said: The task of opening this discussion is not a very easy one. This matter has been the subject of discussion by numerous bodies, but there have never been any constructive suggestions put forward likely to secure agreement amongst the different sections of the community. Unfortunately Colonel Brittlebank is not here, and I am sure we shall miss his contribution to the discussion, especially in view of the fact that he has had a very great deal of experience with regard to the subject of milk control. The desirability of having this discussion arose out of a resolution sent by one of the Divisions of the Association.

The matter was discussed on 21st November, 1928, and the resolution was passed on to a meeting at Reading, and then to the Ministry of Health. It seemed to some of us that the mere passing of resolutions was of no use, and that if we were to carry the matter further it was essential that we should be able to put forward some constructive suggestions. The attitude of our profession has never been definitely stated in this respect. I think that at this Congress we should put forward some really sound suggestions in order to deal with the matter, and one hopes that from this Congress a resolution will be forthcoming and sent to the proper official quarter. In amplification of what I have been saying, I would just remind you that the subject was under consideration last year at the World's Dairy Congress, when there was a very full discussion upon it. The Chairman (Sir George Newman) summed up the attitude of the Ministry of Health by saying there was no one in the room who found the present designations more unhappy, uncomfortable, inconvenient, and inconclusive than they (the Ministry of Health) did. He also said that he would welcome united opinion for improved naming of the grades of milk. That is the crux of the matter. Some may think that the official attitude of the Ministry of Health is a weak one. They want a unanimous opinion of the whole of the parties concerned. It is impossible to expect unanimity amongst the parties concerned. The position is rendered a little more complicated by the fact that successive Ministers of Health have not been in agreement as to the designations. The last Minister of Health, Mr. Neville Chamberlain, stated, in the course of a speech, that classification did not necessarily involve legislation upon the subject. Apparently, according to Mr. Neville Chamberlain, no legislation is necessary. Some time ago, in the House of Commons, a question was put regarding the matter, and the present Minister of Health replied that legislation would be required to give effect to a change. I am not quite sure as to which is right with regard to the question. Upon one hand, we are told that no legislation is required; and upon the other that it is required. What we should do is to arrive at something like a unamimous conclusion regarding the improvement of the designations. As you are aware, there are three designations applied to milk. As has been pointed out to you, the revision of the designation, Grade A milk, is one of the most confusing points of the whole question. Grade A milk is not the highest grade. Something will have to be done in re-naming that grade or abolishing it altogether. I think that the designation, Grade A, could be abolished. From my experience in Cumberland, we are getting a considerable quantity of milk which comes up to the standard applied to Grade A. The two other grades of milk are somewhat confusing to the general public; and one believes that the essence of any scheme of grading should be a guarantee of its freedom from tubercle bacilli. The two higher standard designations—Certified, and Grade A (Tuberculin-Tested)—are confusing to the general public. I am sure that Certified milk producers would bitterly oppose any suggestion that the two tubercle-free classes of milk, Certified, and Grade A (Tuberculin-Tested), should be merged under one grade simply as "Tubercle-free Milk." I think most of us are agreed that pasteurisation is no substitute for cleanliness in milk, but is unfortunately a necessity for *some* of the milk produced and sold. Pasteurised milk should be reasonably clean, to begin with; and I would like to see the standard of all pasteuri ed milk raised to the standard of what is to-day designated as Grade A Pasteurised, so that the second grade of Pasteurised Milk would be abolished.

MR. HUGH BEGG: Mr. Simpson has given us a very fair epitome of the position as it now stands. Most of us who have had to do with Government departments hold that after we have set the ship afloat the course that is being steered should be made clear to us. The Government are always anxious to give effect to the view we express and to make the minimum of changes in the Orders they have made. I know that the department in Scotland with regard to this matter are very anxious to get from us a thoroughly sound scheme. To me it seems that most of the destructive criticism centres round the designation, Grade A milk, being applied to what is actually the third grade—to milk which may be affected with tuberc le bacilli. I do not wish you to believe that the men who framed these Orders were altogether fools. (Laughter.) I have a great horror of the long-winded term, Grade A (Tuberculin-Tested) Milk. If milk is bottled upon the farm it should be so marked; and if bottled by the retailer it should be so indicated. The constant criticism of Grade A milk is a carry-over from early days. If we take away the designation Grade A now, we will be asking the people to unlearn something. In Lanarkshire

the people are not bluffed in any way by the term Grade A.

Mr. STEELE BODGER: I regret that we are being confined to one subject alone, because in my view the subject goes far deeper than that. The whole question requires solving. Mr. Simpson has put the official statement at the London Dairy Congress before us, but he omitted to point out that Sir George Newman said the matter would receive favourable consideration by the Government. Hundreds of farmers would hold licences for Grade A milk as a stepping-stone to the production of tuberculin-tested milk, if the authorities would permit them to retain (not add) reacting cows in their herds. A tremendous amount of good work has been done by producers. In my experience, better milk is being produced by Grade A (Tuberculin-Tested) milk producers than by certain producers holding the Certified milk licence. I am speaking generally now. Milk producers are applying to have the day of production put upon their bottles. It is understandable that people want the milk which is labelled. The producers ask that the Order should read that the day of production should be from sunset to sunrise. It that were agreed to, a great improvement would be effected. The public do not like to use milk bearing the previous day's label, though they have done so without knowing it and without any harm.

Mr. D. S. RABAGLIATI rose to continue the discussion, but as several members had pointed out difficulties in keeping to the subject of nomenclature alone,

The CHAIRMAN said: Is it your pleasure that the question should be made an open one? Those in favour of adhering to the title in the programme should give a show of hands.

It was agreed to adhere to the title of the discussion.

Mr. RABAGLIATI: I think it would be a great advantage to have two grades of Grade A Milk. I do not quite agree with what Mr. Begg has said about the people knowing exactly what the grading means. Farmers and producers know very well, but I do not think the public know. As regards the Order in England, the best way to encourage tubercle-free milk would be to put the matter into the hands of the County Council. I am sure that the vast majority of the County Councils would look better after the Order than at present, because the Ministry of Health have not the staff to go round. In Scotland here, the carrying out of the Order is in the hands of the Local Authorities. The names of the milk should be made as plain as possible, so that the public would understand the matter thoroughly. Many farmers in England have lost cows from tuberculosis: it is impossible to keep a herd strictly free from tuberculosis. With regard to what has been said about the definition of milk, it is very hard that a man should have to label it in the wrong way. I think it might be a very good thing to raise the standard of fat to 3½ per cent. In England the standard is left at 3 per cent. I do not know that the cattle in Scotland are so vastly superior to the cattle in England that there should be a difference in this respect. Might we not agree to a super-grade milk and a graded milk like the present Grade A?

Professor G. H. WOOLDRIDGE: With regard to what Mr. Begg has said about the public's understanding of grades of milk, I have to say that only last week I asked some friends, educated people, "Why don't you get the best milk, Certified Milk?" and they answered "We do get the best milk: we buy nothing but Grade A." As has been said, the people who framed the Order were not fools. They had a strong insight into the psychology of the farmer. There has been a lot of criticism of the Order since it was framed. It has been suggested that there is no necessity for three grades of milk. I think two grades are sufficient. I think Certified A and Tuberculin-Tested should be put as one grade, and should be called Grade A (Tuberculin-Tested). The next grade—which is the present Grade A—should be called Certified Clean Milk. If that were done, it would not be long before the meaning was appreciated. With regard to Pasteurised Milk, I am in agreement with Mr. Simpson, that only one grade is necessary. Let it be the present Grade A, Pasteurised Milk. I agree with what Mr. Steele Bodger has said as to the wording upon the caps of the bottles. It is quite impossible for a man to market his afternoon or evening milk upon the day of production. I think Mr. Steele Bodger's remarks upon this point should commend themselves to everyone. There should be a distinction between milk bottled at the farm and milk bottled by the distributor, though the quality of the milk is the same in each case. It is unreasonable to expect that the ordinary farmer will improve the standard of his milk and then have it definitely labelled as third-grade milk. It is necessary to confer on it such a title as Grade A to induce producers to move. I think the whole grading order might now be put in the melting pot.

Mr. J. A. DIXON: It is difficult to know when to begin and end when dealing with this question. I might emphasise what Professor Wooldridge has said upon it. I think the Orders should be considerably altered. There is room for two grades of milk. The people of Yorkshire are still confused about the meaning of Grade A milk; even doctors are misled by the grading names. I am beginning to be tired by the talk about coaching the farmers—the only way is to compel cleanliness in milk production. Legislation should be passed empowering Local Authorities to throw down the drains and destroy any milk that does not conform to a proper standard as regards bacterial content. Moreover, all milk should be marketed in properly sealed containers. I would suggest that all super-grade milk, above Grade A, should be bottled at the farm. The removal of milk before being bottled leads to a lot of confusion—to use a mild term. I think that the licensing and control of graded milk should be placed in the hands of the County Councils—as we all know, the County Councils are in close touch with the people. When a man has defied the Order he should

be brought to book; it takes about three months to get a man's licence suspended in England. I regret to say there is a lot of profiteering going on in England.

Mr. F. A. DAVIDSON: In the county of Dumfries we have no use for Grade A milk. Certified milk has, in my opinion, ruined the graded milk trade by its excessive price. I know a farmer who produces Certified milk and sells it as Grade A (Tuberculin-Tested), and is quite happy. All the milk produced to-day should be of the present Grade A standard. Our experience in Dumfriesshire, after taking many samples, is that practically all the milk conforms to Grade A standard. More lives have been lost through lack of drinking or using milk than through bad milk.

After some further contributions, the Chairman said: You have all heard the discussion. The next point is—what are you going to do about the matter? Do you want a resolution to go forward? If so, will someone propose one? If you want a committee, please name one. The matter can be held over till the adjourned annual meeting on Friday.

Mr. BEGG: I think we should leave the matter to the Council. I beg to move that there be three grades: 1, Certified (a) bottled at the farm; (b) bottled by the distributor; 2, Grade A; 3, Pasteurised milk.

Professor WOOLDRIDGE: I would suggest that the resolution be divided into two parts. I would leave out the distinctions regarding the milk.

Mr. BEGG said he was willing to alter the motion to the effect that there should be three grades of milk—two grades of new milk and one of pasteurised. One of the two grades of new milk should be tubercle-free, and the second "from other cows."

Finally, the meeting unanimously resolved to recommend:—

(*a*) That there shall be three grades of milk: (1) Milk from cows which have passed the tuberculin test; (2) Milk from other cows; and (3) Pasteurised milk.

(*b*) That the above resolution be forwarded to the Council N.V.M.A. in order that appropriate designations may be decided upon and furtheraction taken.

"DICK" COLLEGE CENTENARY POST-GRADUATE FELLOWSHIP.

At a meeting of the Trustees of the Centenary Post-Graduate Fellowship of the Royal (Dick) Veterinary College, held at Edinburgh on 18th September, Mr. William Percy Blount was preferred to the Centenary Post-Graduate Fellowship for the year 1929-30. Mr. Blount, who is a member of the Royal College of Veterinary Surgeons, studied at the Royal (Dick) Veterinary College (qualifying in 1929), and held the James Tindal Post-Graduate Scholarship during 1928 and 1929.

In most so-called eczemas of dogs local treatment has no great value except for affording temporary relief. And if, instead, the contents of the large intestine are washed out with saline enemas, and the diet made to suit indications, the summer-time dermatosis in mature dogs may be handled satisfactorily.—*North American Veterinarian.*

THE CLOSING MEETING.

Induction of the New President.

VOTES OF THANKS.

At the closing meeting of the Congress, Dr. O. Charnock Bradley presided over a good attendance at the County Hall, on the morning of Friday, 6th September. Following his induction to the Presidential Chair, Mr. Male conducted the proceedings.

Principal BRADLEY said: The last duty I have to perform at the end of an extremely successful Conference is a very pleasant one. I cannot think of any Congress at which I have been present that has been more pleasant than the one now drawing to a close, and I cannot think of any member of the Association it would give me greater pleasure to induct into the presidential chair than Mr. G. P. Male. (Applause.) It is quite unnecessary for me to dilate at length upon his qualifications. We all know him as a man of extensive administrative experience and as one who will maintain to the utmost the interests and dignity of the Association. We have every confidence that his year of office will, like many years in the past, be a record one in some respect or another. It is our wish that every succeeding year will be in the same category. (Applause.) I have great pleasure, therefore, in inducting Mr. Male into the presidential chair. (Loud and prolonged applause.)

Principal Bradley, amidst loud cheering, performed the induction ceremony, and Mr. MALE, taking the chair said: Dr. Bradley, ladies and gentlemen, I can assure you I am deeply sensible of the very great honour you have done me in electing me President of this great Association, and I thank you most sincerely. After the very kind and all too-flattering remarks of Dr. Bradley, and looking back on the names of my illustrious predecessors in the chair, I am very conscious of my own shortcomings and of the magnitude of the task I have undertaken. It is some years since one engaged in active practice was elected to the office, and many of you know the great difficulties of anyone filling a post of this sort under such conditions. I hope that with your help the year will be made a successful one, and nothing will be wanting on my part to make it so. (Applause.) Perhaps my sympathies will be to some extent with the general practitioner, because I know his difficulties so well, but I wish you to be well assured that the Association will take concern in every branch of the work of the veterinary profession and of all its members in every part of the world. I hope we shall all work together in unison and that our only thought will be the advancement of this great profession and this Association. (Applause.) We want the best brains we can get, and I hope that everyone with ideas or suggestions will come down to London, where you will be assured of a hearty welcome.

THANKS TO THE RETIRING PRESIDENT.

Continuing, the PRESIDENT said: And now I have a very pleasant duty to perform, and that is to move

our heartiest thanks to the retiring President, Dr. Bradley. (Applause.) This is the second time—or is it the ninth time? (laughter)—that Dr. Bradley has filled this position with very great distinction. (Applause.) Dr. Bradley piloted us through the years of the Great War—holding office from 1914 till 1922, and he was also good enough to take office for the past year. His record is an absolutely unique one. Though Dr. Bradley is a doctor of science, he is also, I think, a doctor of health, so far as this Association is concerned. (Applause.) He resuscitated us when we were very nearly drowned and in deep waters. He laid down in 1911 the rules of health upon which we have flourished; and, like a good physician, he has soothed, stimulated, and sometimes scolded his patient when the occasion required it, but at all times with that grace, charm, and tact for which he is so well known. (Applause.) This has meant a very great deal of work, time, and money; and we cannot be too grateful for all he has done, not only for this Association, but for the profession. (Applause.) I hope that you will give him a most hearty vote of thanks for all that he has done for us.

Principal BRADLEY: I am really very touched by the remarks Mr. Male has made and by the way in which you have received them. I do not know that he has entirely spoken the truth; and I am certain that if he has not suggested anything false, he has suppressed something that is true. He has said nothing about the extraordinarily vigorous, enthusiastic, and strenuous work done by other people, and he has been modest enough not to hint that he played any part whatsoever in the resuscitation and re-invigoration of the Association. He and others devoted more time than they could spare to put into the task all the energy they possessed. I wish you to remember that I played only a small part in the resuscitation of the Association; they did more. Mine was a small part; theirs was the actual link. You must not forget that whatever part I played in the fortunes of the Association it has invariably been a pleasant part, and the pleasant features of the Association's work have reached an extremely high point at the present conference. I know no conference at which I have had greater pleasure. I think, ladies and gentlemen, while I appreciate the very kind remarks of Mr. Male and the way in which you have received them, I would like you to remember others who laboured between 1911 and 1922. (Applause.)

RESOLUTIONS ARISING FROM CONGRESS.

Grades of Milk.

The PRESIDENT asked The General Secretary to read the following statement:—

The Special Designations under which milk may be sold or offered or exposed for sale in pursuance of the Milk (Special Designations) Orders were discussed by the Section of Veterinary State Medicine on Wednesday, September 4th, 1929.

It was unanimously resolved to recommend:—

(*a*) That there be three grades of milk: (1) milk from cows which have passed the tuberculin test; (2) milk from other cows; and (3) Pasteurised milk.

(*b*) That the above resolution be forwarded to the Council of the Association in order that appropriate designations may be decided upon and further action taken.

Mr. H. BEGG: As the original mover of the motion, I have pleasure in moving that it be sent to the Council of the Association for consideration, and that they deal with it according to their wisdom.

Mr. H. J. DAWES seconded.

The proposal was unanimously agreed to.

Animal Diseases Research Association Appointment.

Mr. W. NAIRN: The Scottish members at a meeting to-day agreed to ask me to submit this resolution to the Congress:—

"At a meeting of the Scottish members held this morning attention was drawn to the resignation of Mr. W. A. Pool from the post of Director of Research, Animal Diseases Research Association, and the proposal which, it is understood, is to be submitted to the Directors of the Association to appoint to the vacancy a member of a profession other than the veterinary. The meeting viewed this proposal with regret and resolved that the Congress be asked to instruct the Council of the N.V.M.A. to consider the question of expressing the disapproval of the profession to the appointment of any but a member of the veterinary profession to direct the investigation of animal diseases."

As the members of the Association have expressed themselves so heartily, I need hardly say more than a word or two in support of the motion. Within the ranks of the veterinary profession it should be easy to find one competent to deal with the work. I think we should express our disapproval in this way, and it may cause those responsible to consider the unwisdom of any such proposal as that to which we have called attention.

Mr. DONALD CAMPBELL: I have pleasure in seconding the motion submitted by Mr. Begg. We feel that the veterinary profession has now reached such a position of influence that it should protest against the proposal of the Research Association in question.

The proposal was unanimously agreed to.

"Veterinary Record" and Honorary Members.

Mr. STEELE-BODGER: I have to move two resolutions which I hope will commend themselves to the Congress. The first resolution is—"That a copy of the *Veterinary Record* be sent weekly to all our honorary members." There are not very many honorary members of the Association, and I am sure that if we sent them a copy weekly this act of courtesy on our part would be highly appreciated by them.

Mr. JACKSON YOUNG seconded the motion, which was agreed to.

Suggested Amendment of Milk (Special Designations) Order, 1923.

Mr. STEELE-BODGER: The second resolution which I have to move is in the undernoted terms:—

(*a*) That the words "form part of or," in line 3 of the Milk (Special Designations) Order, 1923, Third Schedule, Part III A (1), be deleted.

(*b*) That the words "and the day of production" be deleted from line 6 of the Milk (Special Designations) Order, 1923, Third Schedule, Part III B (2).

The clause in the Order to which I have drawn attention is an injustice, and the wording of the section is also nonsensical. When I raised this matter at a previous meeting I was asked to postpone the matter until this meeting. I have also to move that the regulation as to the wording on the disc of the bottle should be withdrawn. It is a hardship to the producers of the milk to have to place on the disc the date of production.

After some discussion, the resolutions were agreed to by a large majority, and it was further resolved that they be sent to the Council for their consideration.

Votes of Thanks.

The President: I have pleasure in asking Mr. Jackson Young to speak.

Mr. Jackson Young: I am sure you will all agree with me when I say we have had a most successful Congress, and a pleasant time in this "auld toon o' Ayr." (Applause.) The success of the Congress depends in part upon our own efforts, but we are also dependent for its success upon others and for the facilities afforded to us by corporate bodies and other people not belonging to our profession. It is a very pleasant task which I have to discharge. I move that a hearty vote of thanks be given to the following bodies and individuals, all of whom have contributed to the success of this Congress:—

The County Council of Ayr for the use of the County Halls and arranging visits to Ayrshire herds; to the Town Council of Ayr for having accompanied the office-bearers and members of the Association to the Old Church of St. John the Baptist, and for their entertainment at the Banks of Doon Tea Gardens, Alloway, and for the use of the Corporation slaughter-house, and especially to Mr. John Robertson, the superintendent of the slaughter-house, for the excellent arrangements made by him in connection with the operations, demonstrations, and exhibitions of morbid specimens; to the Town Council of Ayr for granting facilities for golf and tennis, and also for the use of the Town Hall for the banquet; to Messrs. James Craig, Limited, Auctioneers, Ayr Cattle Market, for the use of their premises on Wednesday; to the Marquis of Ailsa, Lord-Lieutenant of Ayrshire, for permission to visit Culzean Castle; to Colonel Norman Kennedy, of Doonholm, Alloway, and Mr. James Kilpatrick, Craigie Mains, for showing the members their wonderful pedigree stocks of Aberdeen-Angus cattle and Clydesdale horses respectively; to Messrs. W. C. Gray and Sons, Limited, Newton Carpet Works, for showing the ladies over their carpet factory; to the Earl of Inchcape for permission to visit Glenapp Castle, Ballantrae; to those breeders of Ayrshire cattle whose herds are to be inspected this afternoon; and, lastly, to the Prestwick Golf Club and the Prestwick St. Nicholas Golf Club for granting facilities to play golf over their famous links. As an old golfer I have to say you have to visit Prestwick to realise what a really good golf course is like; and I am sure we are very grateful indeed for the special facilities afforded to us to play on these two first-class courses.

The motion was enthusiastically agreed to.

Mr. J. N. Ritchie: I have been asked to propose a hearty vote of thanks to Mr. R. Ewing Johnston, Belfast, and the members of his band for their excellent music at the reception on Monday night in Western House, Ayr, by the President, Dr. Bradley; also at the Dance at Western House on the Saturday. The pleasure of the entertainment was greatly enhanced by the manner in which the band acquitted themselves.

This motion was also agreed to with acclamation.

Professor Wooldridge: I have to move a vote of thanks to the Provisional Committee. This has been a most successful and enjoyable Congress, and much of its success has been due to the efforts of the Provisional Committee. We all appreciate the exceptionally good work of Mr. David Brown and his co-adjutors.

Mr. David Brown: Before I return thanks, I wish to intimate that we intend to carry through a social evening to-night in Western House, and it will be upon the same lines as that of last Saturday night. Our new President has presented us with prizes for whist. We hope to have what is termed "a guid Scots nicht." We have had a lot of trouble in connection with this Congress, but with such an excellent President as Dr. Bradley and such an energetic local secretary as Major Douglas, the work of the Provisional Committee has been very much lessened. You may remember that it was on my motion it was agreed to hold this year's Congress in Ayr. When you visited Scotland upon a previous occasion you all enjoyed yourselves in the City of Aberdeen, but I think we have beaten Aberdeen. (Applause.) We have tried to get papers of interest to all engaged in the veterinary profession. Tackling this Congress has been a very big thing, and if we have not pleased everybody it has not been our fault. We have certainly done our best to make the Congress an unqualified success. About 300 members of the Association have signed the book at the entrance to the Congress Hall. Over 200 persons attended the banquet in the Town Hall on Wednesday night—the largest attendance in the history of the Association. (Applause.) I have heard that one or two persons were disappointed in connection with the banquet. On Tuesday we had applications for 80 tickets, and on Wednesday night we had to provide for over 200 folks. We are very sorry if some have been disappointed about not getting accommodation, but they should understand they have themselves to blame. (Applause.)

Honouring the Local Secretary.
Major Douglas's Good Work.

The President: I have now to ask Dr. Bradley to perform a very pleasant duty.

Principal BRADLEY: I should not like to contradict the remarks of Professor Wooldridge, that the success of the Congress depends upon the efforts of the Provisional Committee. I know what they have done. I know how extremely enthusiastic everyone has been; and, in my opinion, Major Douglas has been an example of what a local secretary should be. I cannot conceive anyone carrying out the duties better than Major Douglas has done.(Loud applause.) That he has not spared himself is very obvious. You cannot realise the attention he has given to the minutest details. The real success of a Congress of this kind is not so much in the big things as in the little things. (Hear, hear and applause). In the turmoil of his office downstairs, he switches off from some important point to answer some silly question I may put to him. (Laughter.) He thinks of everyone, and has filled me with amazement. What is still more astonishing, he has carried himself this week and previous weeks with an air of calm, a winning smile, and a delightful manner which have been admired by all the members. (Applause.) I am free to confess that I could not have approached within miles of his attitude. (Applause.) I have the greatest admiration for the way in which he has done the work of local secretary, and I think all the members are of the same opinion. Thanks in the form of words are all very well, but we wish that Major Douglas should have something which will indicate in a concrete manner the approval of the Association and the way in which he has arranged the Congress of 1929 in Ayr. (Applause.) Fortunately, the gift which we ask him to accept is one which can be shared by Mrs. Douglas. (Applause.) I ask Major Douglas to accept as a token of our gratitude this display cabinet. Please indicate in the heartiest manner possible your approval of the services rendered by Major Douglas. (Loud applause.)

Major DOUGLAS, who was received with enthusiastic cheers, said: I am not going to deny for a moment that I am very proud of the success of the Congress. It has meant a lot of hard work and a good deal of thought. It has taken up a lot of time; and if you intend to run future conferences upon similar lines I feel you are going to make it very difficult to find a man, not who is capable of doing the work, but who can spare the time to give the necessary attention to the Congress. If I had not had two assistants and capable clerical help, I could not possibly have done the work. Situated as we are here, the committee meetings have been few. I have received invaluable help from the Chairman and Mr. D. S. Barbour, Ayr, and I have also got great assistance from local people. I did not get a single refusal when I applied to anyone for help. Everyone has been most helpful. I should like especially to thank Principal Bradley for the very valuable assistance he has given me all through. The members of the Association have thought fit to present me with a very handsome token of their appreciation of what I have done. I wish to thank you most sincerely for that gift. It is a piece of furniture which would be an acquisition to any home. In conclusion, may I say that if the accounts turn out in a satisfactory manner, we can congratulate ourselves upon the Ayr Congress. (Applause.)

The cabinet bears the following inscription:—"Presented by the National Veterinary Medical Association to Major A. Douglas, M.R.C.V.S., D.V.S.M. (Vict.), Local Secretary, Ayr Congress, 1929."

OTHER VOTES OF THANKS.

Principal CRAIG: The task allotted to me is a very pleasant one. We are very much indebted to our own members for the contributions which they have made to this Congress. I have to move a vote of thanks to the readers of papers submitted to the Congress. We know that a great amount of time and trouble is involved in their preparation.

The motion was carried with enthusiasm.

Principal A. W. WHITEHOUSE: I have pleasure in moving a vote of thanks to the officials of the Association—Mr. E. Alfred West, Honorary Treasurer; Mr. H. J. Dawes, the Honorary Secretary; the Solicitors; Mr. William Brown, the Editorial Representative; Mr. F. Knight, the General Secretary; and the Auditors.

With regard to Messrs. Brown and Knight, we have provided the former with work which will keep him busy for a long time to come, and the latter with sufficient material to keep him also busily engaged.

The motion was carried amid loud applause.

Major MCGREGOR proposed a vote of thanks to the Press for the excellent reports of the Congress which had appeared in the leading and local newspapers.

The proposal was heartily agreed to.

The meeting then terminated.

ABSTRACT:

[**A Simple Test for Albumin in Urine.** *Indian Medical Gazette*, January, 1929, p. 17, through *B.M.J.*, 3559, 54, 1929.]

C. Bose describes a simple, delicate, and reliable means of detecting albumin in the urine, which is said to possess advantages over the nitric acid test in that it does not precipitate mucin, urea, or urates, unless the last are greatly in excess. The test is applied in a similar way to that of Heller with nitric acid, by allowing a filtered saturated solution of saccharin in water to run slowly down the side of a test tube by means of a pipette and to settle at the bottom. If even a trace of albumin is present, a sharply defined white ring forms slowly at the junction of the two fluids. The same result is obtained as with strong nitric or picric acid, but the saccharin solution, being perfectly harmless, colourless, and odourless, and having no toxic or caustic action, possesses the additional advantage of being easily carried in the pocket in a stoppered bottle for use in the patient's home. Since the solution does not precipitate mucin, it has an advantage over the heat and acetic acid test. It is added that the albumin-precipitating property of saccharin was discovered while it was being used as a sweetening agent with milk.

GEORGE P. MALE, M.R.C.V.S., President N.V.M.A., 1929-30.

The unanimous election of Mr. G. P. Male, of Reading, as President of the Association for the year 1929-30, which was made at the annual meeting held at Ayr, will be enthusiastically endorsed by the whole profession. It is a fitting culmination of his many activities in upholding and increasing its status, whilst his judgment and tact should make his year of office a most successful one.

Mr. Male had a distinguished career as a student at the Royal Veterinary College, London, and amongst many other prizes won by him were the Centenary, Coleman, and Royal Agricultural Society's medals. He qualified in 1902 and was House Surgeon 1902—1903.

In 1905 Mr. Male started practice in Reading and, owing to his ability as a surgeon, his careful observations and real hard work, combined with his personality, it has become one of the largest in the United Kingdom. Our President has not been content, however, to confine himself to the ordinary routine of general practice. He has officiated as Lecturer in Veterinary Hygiene, Reading University, during the years 1905—1929 and, as a mark of appreciation of his services he was, in 1920, awarded the Diploma of Associateship *Honoris Causa*. In addition, Mr. Male was Lecturer in Veterinary Science at Oxford University, 1920—21. He has rendered outstanding service to his local veterinary society—the Royal Counties Division N.V.M.A., in which he held the dual appointment of Secretary-Treasurer for many years, while in 1919 he was awarded the well-merited honour of the Presidency. In the following year the Treasurership reverted to him and he still retains this office. One can safely say that, had it not been for his interest and energy during the war, this Society would have been in real danger of becoming defunct, whilst now its increasing membership has made it one of the strongest divisions of the "National."

Mr. Male was elected a member of the Council of the Royal College of Veterinary Surgeons in 1919, where he has given a considerable amount of time to the work of various committees and at present is Chairman of a Sub-Committee on Colourings and Markings of Animals, with a view to their Standardisation. He has been a member of the Council of the "National" since 1911, and a member of the Editorial Committee since its commencement; indeed, he is one of the small band of workers who, with Professor Buxton as its head, started the *Record* on its journey, as the official organ of the Association. Mr. Male is also Chairman of the Veterinary Officers and Public Health Committee. Our President holds, or has held, the following appointments in yet other fields of activity to the many already mentioned:—Past Vice-President, Member of Council, Comparative Medicine Section of the Royal Society of Medicine; Member of Committee of Management, Research Institute in Animal Pathology, London, 1928; Member, Warble Fly Committee, representing Bath and West Society, 1929; Member, Horse Breeding Committee, Berks. County Council; Consulting Veterinary Surgeon and Veterinary Inspector, Bath, West and Southern Counties Society; Consulting Veterinary Surgeon and Veterinary Inspector, Royal Counties Agricultural Society. Mr. Male holds Local Inspectorships for the Ministry of Agriculture, Berks County Council and the Borough of Reading. He has been a pioneer of clean milk production and the establishment of tuberculin-tested herds and during his professional life has written papers and opened discussions at Milk Congresses, Veterinary Meetings, and those of the Royal Society of Medicine, the Royal Sanitary Institute and other bodies.

Although Mr. Male has so many responsibilities, he yet finds time for the social and sporting side of life; as both Mrs. Male and he are well known in the hunting field. He is a member of the South Berks Hunt and Point-to-Point Committees, is Joint Master and Huntsman of the South Oxford Drag Hounds, and has won many "Point-to-Point" Races and Show Jumping Competitions. In addition, his extensive knowledge of horses and horsemanship has made his services in great request as judge at different shows of hunters, hackneys, Shires and jumpers.

J. W.

THE TRADES EXHIBITION.

Official Opening by the President.

The Trades Exhibition which, though containing fewer exhibits than were on view in some former years, created an impressive display in an admirably-situated and suited apartment adjacent to the Great Hall in the County Buildings, was formally opened by the President on Monday, September 2nd, in the presence of a large assembly.

Dr. BRADLEY said: There are many justifications for a Congress, and one of them is certainly that it allows people to see the new instruments and drugs that are put into our hands to assist us in our conflict against disease. You will join with me, I am quite sure, in trusting that the people who have been good enough to make a display here to-day will receive a considerable amount of advantage. The way they have put their backs, as it were, into the Exhibition is most praiseworthy, and the very least we can do is to look, if we do nothing more, at what they have put before us.

I need hardly say that an occasion of this sort is extremely valuable to those who are more or less isolated in country practice, because it allows them to see the actual things and does not compel them to rely upon catalogued descriptions. Catalogued descriptions, as one knows, are usually somewhat picturesque, the actual thing itself naturally being a very much better guide.

I therefore commend to your earnest inspection all that there is in this room, and declare the exhibition open to the Congress. (Applause.)

[*Photo by Elliott and Fry, Baker St., W.*

GEORGE P. MALE, M.R.C.V.S.,

President of the National Veterinary Medical Association of Great Britain and Ireland, 1929-30.

The proximity of the exhibitors to the meeting-place of the delegates was a source of mutual satisfaction, and from the busy spectacle to be witnessed both before and after the respective sessions it was evident that the President's advice was readily followed. The hall was throughout the Congress an artistic and cheery spot and we are glad to have had, from various firms, satisfactory reports of the business done.

THE AYRSHIRE CATTLE HERD BOOK SOCIETY staged a very attractive exhibit of photographs of the breed. Principal among those were photographs of "Barr Amelia," "Cargen Holm Sally 3rd," "Millantae Mayflower" and "Bargower Eva," winners of the Supreme Championship over all breeds at the London Dairy Shows of 1923, 1924, 1925 and 1928 respectively. Other photographs included those of "Hobsland Mendel" sold for 1780 guineas when a yearling—the highest price ever paid for an Ayrshire at auction: "Howie's Hot Stuff," which brought 1700 guineas as a yearling, and "Carston Cinderella 2nd," which won the Championship for medium Breeds in the Milking Trials at the Royal Agricultural Society's Show at Cambridge in 1922.

Some old prints showing the type of Ayrshire at the beginning of the 18th century also created much interest. There was also on view the Bledisloe Challenge Trophy, which is awarded by the British Dairy Farmers' Association to the Breed Society having the best exhibit of six cows judged by Inspection, Milking Trials and Butter Test at the London Dairy Show. This trophy has been won by Ayrshire cattle four times during the past five Shows, three of these being in successive years, namely, 1923, 1924 and 1925. Ayrshires were reserve for the trophy in 1926, but there were no cattle at the 1927 Show on account of foot-and-mouth disease in the London area. Ayrshires again won the trophy in 1928. This is a record approached by no other breed of cattle and is highly creditable to those responsible for the Scottish Dairy Breed.

BURROUGHS, WELLCOME AND CO.—Some of the most recent products prepared by the Wellcome Physiological Research Laboratories (Beckenham, Kent) and distributed by Burroughs, Wellcome and Co., were displayed.

Prominence was given to "Wellcome" Canine Distemper Prophylactic (Vaccine and Virus) which offers a much-needed and valuable means of conferring immunity. The method of immunisation recommended consists of the injection of a dose of Canine Distemper Prophylactic (Vaccine) followed by a small dose of Canine Distemper Prophylactic (Virus), not earlier than seven days afterwards. The purpose of the vaccine is to induce a resistant state and that of the virus to convert this state into immunity. Experience has shown that the risk to vaccinated dogs, as a result of the double inoculation, is small. All prophylactic distributed by Burroughs, Wellcome and Co., has passed the test used by Laidlaw and Dunkin. An interesting chart explained the method of manufacture of the vaccine and indicated how it was tested in dogs for potency. Clinical experience of "Wellcome" Canine Distemper Prophylactic can obviously only be accumulated through the reports of veterinary surgeons. Burroughs, Wellcome and Co. suggest the desirability of sending clinical details of the behaviour of dogs under inoculation to the professional press and also to The Director, Wellcome Physiological Research Laboratories, Langley Court, Beckenham, Kent.

"Wellcome" Lamb Dysentery Prophylactic (Vaccine) is another recent product. It is prepared from organisms isolated from lambs affected with lamb dysentery. In carefully-controlled field experiments, ewes injected once during autumn, before tupping time (*e.g.*, October) and again once during pregnancy, as near to lambing time as possible, have produced lambs among which the death-rate from lamb dysentery has been reduced to a low figure, whereas the lambs born from uninoculated ewes on the same farms, and kept under the same conditions, have died at the usual rate.

"Wellcome" Swine Erysipelas Vaccine consists of living cultures of several strains of *B. erysipelatus suis* isolated from pigs affected with acute swine erysipelas. The cultures have been grown artificially for many years and, while retaining their antigenic and vaccinating properties, are apparently quite safe to use, for they have failed to infect susceptible pigs even when injected in large doses.

A wide variety of "Wellcome" Serological Products, "Tabloid" and "Soloid" Preparations, and "Wellcome" Chemicals and Galenicals of interest to veterinarians was also exhibited and attracted considerable attention.

Specimens of a new 40-page booklet entitled "Current Veterinary Topics" were shown. It contains many valuable features, including articles on the prevention of canine distemper, on swine erysipelas, braxy in hogs, infective jaundice in dogs and lamb dysentery. Special sections are devoted to veterinary anthelmintics, veterinary obstetrics and veterinary anæsthetics. "Current Veterinary Topics" has been entirely re-written and brought into line with the results of the most recent research. It should prove of considerable value to veterinarians, particularly to those who, while wishing to keep abreast of every modern development, cannot spare the time necessary for studying long and detailed accounts of new researches. These busy practitioners will find, in the new booklet, up-to-date, classified and readily accessible information.

This booklet is now being distributed, and any veterinary surgeon who does not receive his copy is asked to send a card to Messrs. Burroughs Wellcome and Co., Snow Hill Buildings, London, E.C.1.

ARNOLD AND SONS featured their usual wide range of veterinary instruments and appliances. Of particular interest was a range of instruments in stainless steel. Modern instruments shown were the teat-end instruments devised by Mr. Oscar Stinson, M.R.C.V.S., Nielsen's sterility instruments, Thygeson's embrytome, and many other instruments

manufactured to special design. Various forms of obstetric forceps appeared to be favourably accepted by the profession. A number of gynæcological instruments also attracted attention.

Messrs. Arnold and Sons manufacture practically every class of veterinary instrument on their own premises, and the name "Arnold" is a guarantee of a well-made product which has the backing of years of experience and is accepted the world over.

A feature of great interest was the "Arnold" ultra-violet lamp, specially designed for use in veterinary practice. This has met with a cordial reception, particularly for the treatment for valuable blood-stock. An increasing number of veterinary surgeons are now interesting themselves in this form of veterinary practice.

In conjunction with the exhibit, Messrs. John Bell and Croyden, of Wigmore Street, W1, offered a complete range of sera and vaccines for veterinary use, prepared by the Serum Laboratory of Antwerp, whose products in this country are in increasing demand.

Messrs. C. J. Hewlett and Son, Ltd., of Charlotte Street, London, E.C., had a comprehensive exhibit of drugs, surgical instruments, etc., which attracted considerable attention. Noticeable among the more recent introductions were the new caponing instruments suggested by Mr. F. L. J. Crouda e, M.R.C.V.S., with which demonstrations were given both last year at the meeting at Newcastle-on-Tyne, and at this year's Congress. The set comprises retractor forceps, spoon forceps, curved canula, combined with a scoop and hook, knife and hooks and cord, complete in wooden case.

The exhibit included an all-metal hypodermic syringe for the intradermal tuberculin test, with adjustable nozzle attachments and spare needles in glass tubes in an aseptic case, so that every part can be easily sterilised, also the "Unique" syringe, which can be used for tuberculin injections as well as ordinary hypodermic solutions, and has a graduated glass barrel with metal plunger, graduated piston and regulating screw. It has the advantage also of adjustable nozzle attachments, one of which will take ordinary record needles and is supplied in aseptic case with one dozen needles in glass tubes and two stainless record needles. A stub-ended clinical thermometer, at a very moderate price, which has been widely approved by veterinary surgeons, was shown.

Old-established remedies, such as Parophyroxia, for colic impaction in horses; Myroxline, for mange and ringworm; Eucalyptus Dog Wash; Antithermogen, the antiseptic and absorbent dressing for inflammation, tendonitis, etc., were given special prominence. Among the newer prepartions displayed were Lin. Staphisagriæ Co., a saponaceous preparation for killing ticks, lice, etc., in animals and destroying their eggs; Lin. Iodermiol, a non-staining iodine liniment; Mist. pro Chorea Conc. for dogs; Pessaries of Methyl Violet which have lately come into favour as a new antiseptic, and Tetralene Capsules (Ethylene Tetrachloride) which have been recommended in the treatment of Nematoda, such as round and thread worms in dogs, cats, poultry, pigs and sheep. These capsules are made in four sizes, from 3 minim up to 75 minim.

Hormonigen tablets for sterility in cattle have been very successful, and Elixir Hormonigen, made from the fresh glands, has proved a valuable remedy for bronchitis, asthma, chorea, etc., in dogs.

A very attractive display was made of packed drugs for the busy practitioner, which included dusting powder, bath powder, teat ointment, tonic food for dogs and cats (Virophos), udder ointment, etc. These are all put up in various sizes with plain labels and the name and address of the veterinary surgeon is printed free.

The various vaccines, sera, bacterins, and aggressins of the Bacteriological Institute, Tours, and the Jensen-Salsbery Laboratories, for which Messrs. Hewlett and Son, Ltd., are sole agents, attracted a good deal of attention. The demand for these is steadily growing and their success is proof that the profession is recognising that their remedial value, in certain cases, is indisputable. The number is increasing and comprises remedies for diseases in horses, cattle, dogs, poultry and swine.

The International Serum Co. were to the fore with an excellent exhibit, displaying a wide range of sera and vaccines, and as is well-known, the firm specialise in swine erysipelas serum and vaccine, swine fever serum, abortus vaccine (live and dead bacillus), and mastitis serum and vaccine. Many practitioners have testified to the value of these and other preparations supplied by the International Serum Co.

Parke, Davis and Company were making a special display of "Nema" Worm Capsules containing tetrachlorethylene, which has been recommended for the removal of roundworms and hookworms from dogs, silver-foxes and cats, round worms from pigs and poultry, and stomach worms from sheep and goats. The capsules are supplied in various sizes suitable for different animals, and their administration to the larger animals is facilitated by the use of the Capsule Forceps in conjunction with the special Mouth Spreader. Capsules of chemically-pure carbon tetrachloride (1 c.c.) for the treatment of liver fluke disease were also given prominence. The oral administration of arecoline hydrobromide for the removal of tapeworms from dogs is not infrequently attended by vomiting, but the combina ion of arecoline and chloretone offered in capsules satisfactorily overcomes this difficulty.

Among the products from the firm's biological laboratories were tuberculin of high potency for either intradermal, ophthalmic or subcutaneous tests; Mixed Infection Bacterin (Bovine) suggested for the treatment or prevention of mastitis; Anti-influenza Serum (Equine) for the treatment of influenza, strangles, pneumonia, etc., in horses; Anti-white Scour Serum, Anti-anthrax Serum and Hæmorrhagic Septicæmia Bacterin.

"Parcaine" Solution, for the production of local anæsthesia, is exceptionally satisfactory in veterinary practice and is free from the restrictions of the Dangerous Drugs Act.

The Parke, Davis and Co. eye ointments, in convenient collapsible tubes, are especially suitable for veterinary use; the series includes Protosil, Neo-Protosil, Scarlet Red and others, in addition to Yellow Oxide of Mercury.

There was also a prominent display of "Neko" (Germicidal Soap) which contains 1 per cent. of potassium-mercuric iodide and is actively germicidal; this soap is specially serviceable for cleansing the hands of the operator and the site of operation, and after attendance on infectious cases. Fecto is an alkaline solution of hypochlorites containing 4 per cent. of chlorine, suitable for use as an antiseptic dressing or general disinfectant.

Other preparations exhibited included Metatone (a combination of glycerophosphates with nuclein and vitamin B), Adrenalin Chloride Solution, Ephedrine Sulphate Tablets, "Pituitrin" (posterior pituitary-extract), "Pitocin" (the oxytocic fraction of pituitary extract), "Pitressin" (the blood-pressure-raising principle of pituitary extract), Hemop'astin (hæmostatic serum) and Capsules of Chloretone and Belladonna Compound, which have been found particularly serviceable for the symptomatic relief of canine hysteria.

Spratt's Patent Limited were welcome newcomers to the Exhibition and showed a wide range of the different foods which they manufacture—the product of nearly 70 years' continuous study of dog feeding and dog rearing. The interest displayed by visitors at the stand was in itself a tribute both to the attractiveness of the exhibit and to the reputation deservedly enjoyed by the firm as "canine caterers."

Willows, Francis, Butler and Thompson, Ltd., were, as usual, much in evidence, and well supported their reputation as a favourite firm of the veterinary profession. They were again privileged to supply the surgical accessories for the operations at the Congress, and in general anæsthesia their special chloroform acted most satisfactorily, even under an exceptionally-prolonged operation, while their Chlorocain, which it is claimed is now by far the most widely used preparation of its kind, maintained its already high reputation as a local anæsthetic.

The firm had a large display of their standard preparations, some of which have been in general use for a century and are still in constant request.

The progress of Biologics has not found Willows wanting, and they showed a wide variety of Vaccines and Sera, amongst which we may mention particularly Cutter's Blackleg Aggressin, for which they are sole agents, and which has proved itself for many years the most satisfactory method of combating this plague.

The genuine Pasteur Tuberculin was shown, and of this Willow's hold a large stock, constantly replenished from Paris.

In all, Willows' had three stalls, to two of which reference has already been made. The third stall provided a most attractive display of surgical instruments, including many novelties, and we congratulate this historic firm on its progressive methods and enterprise.

TUBERCULIN TESTING.

By Professor J. B. Buxton, M.A., F.R.C.V.S., D.V.H.

Congress Popular Lecture.

The popular lecture this year was in the capable hands of Professor J. B. Buxton, of Cambridge, who, speaking on the important subject of the tuberculin test, held thoroughly absorbed, throughout his long discourse, an audience which was thoroughly satisfactory in number and in kind—there being a large proportion of dairy farmers present. The lecture was illustrated by a considerable number of lantern slides depicting reactions to the various types of tests employed.

The Hon. T. G. Corbett, Rowallan, Kilmarnock, who presided, said that tuberculin testing was a matter which concerned vitally the farmers of the West of Scotland and the whole dairy industry, and he felt sure they would listen with interest and profit to the lecture which Professor Buxton, who was an acknowledged authority on the subject, was going to give to them. They already knew of the work Professor Buxton had done through their dealings with their county veterinary officer, Mr. Douglas, who was a great admirer of Professor Buxton.

Professor Buxton said: When I was asked by the Provisional Committee of the N.V.M.A. to give a popular lecture on tuberculin testing, I was not unappreciative of the great honour which was accorded me, neither was I unmindful of the difficulties which beset me in my undertaking.

It is my privilege to address an audience consisting on the one hand of expert technicians who have had great experience of tuberculin testing, and to them but few of my remarks are addressed. Many, on the other hand, represent experienced owners and breeders of valuable livestock, who have considerable knowledge of the practical application of tuberculin tests and who at times, no doubt, may have been puzzled by some of the many problems which appear to be inseparable from tuberculin testing on an extensive scale. If my few remarks can do anything to render these apparent difficulties less real I shall feel that I have achieved something.

During the past ten years I have had thousands of questions relating to tuberculin testing addressed to me, and I have taken these as the text of my lecture to-day.

What is tuberculin? Subsequent study of the organisms discovered by Koch to be the causal agent of tuberculosis soon revealed that in the course of the physiological processes attendant on its growth and multiplication the bacillus gave rise to various chemical substances some of which had a poisonous effect when introduced into the bodies of animals; and it became recognised that the excretion of these substances by the bacillus while it was setting up tuberculous processes in the body which it had invaded played an important part in the development of the disease.

These poisonous substances of the bacillus were found to be present in artificial cultures of the organism, being chiefly retained in the bodies of the bacilli and capable of being extracted from these by the appropriate use of glycerine and other agents. To such a solution of these products the name tuberculin was given.

There are now several varieties of tuberculin, each essentially the same but differing principally in the method employed for the preparation of the active substances according to the use for which the tuberculin is designed, *i.e.*, whether for diagnostic or therapeutic purposes.

The tuberculin commonly used for the detection of tuberculous processes in cattle consists of a concentrated glycerine extract of actively-growing tubercle bacilli in broth, from which in the course of its preparation the bacterial bodies have been removed by filtration. It is known as Old Tuberculin or Concentrated Tuberculin.

Why does tuberculin produce a "reaction" in tuberculous animals? Tuberculous infection produces changes in the animal body, as a result of which the body tissues react to a second infection or to the application of the chemical substances of the tubercle bacillus in a different manner from the tissues of an animal which has not yet been infected. This altered power of reaction mainfests itself in an increased resistance to the organisms and in hypersensitiveness to its poisons. It is this hypersensitiveness of the tissues of the tuberculous body to tuberculin which is responsible for the various reactions which are so useful in the diagnosis of the disease. I do not propose to enter upon a discussion of the various theories that have been advanced with a view to explaining the exact mechanism of this reaction. It will suffice if, for the sake of illustration, I remind you of the hypersensitiveness of some people to specific substances such as pollen or egg white, and of the amazing and sometimes startling reactions which these unfortunate people exhibit as a result of the subsequent introduction into their systems of a further dose of the particular material. Tuberculin belongs to this group of substances the administration of which to hypersensitive subjects gives rise to a series of symptoms which have no relation whatever to the normal action of such a substance and which cannot call forth similar phenomena in normal individuals no matter what dose is used. It is true that tuberculin differs in several important respects from the two examples which I have given you, but that is a matter of academic interest rather than of practical importance. One important characteristic which the tuberculin reaction shares with the so-called "anaphylactic" reactions is that it takes place within or upon the cells of the body and not in the blood stream.

Variations in sensitiveness. Cattle may be sensitised for the tuberculin ordinarily used for testing them by either bovine or human tubercle bacilli, although the latter cause no lesions or only small, inconspicuous, retrogressive lesions in their bodies. They are only slightly, or not at all, sensitised to human or bovine tuberculin by avian tubercle bacilli. Fairly wide variations in sensitiveness to tuberculin are observed in different animals; there is no relationship between the intensity of the reaction and the extent of the tuberculous processes except in so far as animals suffering from very advanced tuberculosis usually react less distinctly than do animals with less extensive but active lesions. Those in which the disease is actively progressive usually exhibit a high degree of sensitiveness to tuberculin. The tissues of those suffering from extensive lesions, especially if of long standing, appear to become exhausted and incapable of a vigorous response to the stimulus of tuberculin. In such animals, however, it is usually unnecessary to employ tuberculin as an aid to diagnosis, since the clinical manifestations are in themselves often sufficient indication of the presence of the disease.

Tuberculin tests. The application of tuberculin to most of the tissue cells of the tuberculous body will evoke a reaction in those cells. Advantage has been taken of this to devise a number of so-called tests for the detection of tuberculous infection. Broadly, these tests may be classed as *general* or systemic, and *local*, or a combination of the two. Time does not permit of my giving a detailed description of these various tests, nor is it necessary, since only a few have come into general use for diagnosis, and those, no doubt, are well known to most of you. A brief reference to two or three of these is necessary in order that my remarks at a later stage may be intelligible to those of you who are not so well acquainted with the varieties of tests. I can spend my time more profitably by a consideration of some of the difficulties which are experienced in testing cattle under ordinary conditions, and I will therefore confine my remarks to two or three of the better known and more generally used tests which have come to be regarded as official.

Discussion of the Tests.

The tests usually employed and generally recognised for official purposes in this and other countries are:—

1. The subcutaneous test.
2. The intradermal test.
3. The double intradermal test.
4. The ophthalmic test, in conjunction with one or more of the preceding, but not alone.

There can be no doubt in the mind of anyone possessing a knowledge of tuberculin testing that these tests, either alone or when two or more are employed at the same time, have placed in our hands one of the most reliable biological tests that are known. At the same time it should be realised that, however great the skill employed in their application and interpretation, 100 per cent. efficiency cannot reasonably be expected from any test which depends for its achievement upon a delicate tissue response. While the value of tuberculin as a diagnostic agent is now so generally recognised that its use has become permanently established, its greatest value will never be realised until we fully appreciate its limitations.

The subcutaneous test being the first to be used extensively, was considered for many years to be the best. To-day it is being more and more replaced as the intradermal tests gain favour, especially in the United States of America. The greatest difficulty in connection with the subcutaneous method of testing is in the possibility that the animal's temperature may be markedly affected during the period of the test from causes other than the specific action of the tuberculin. The risk of error in this direction is great in cattle which are unaccustomed to housing and handling or are tested in strange surroundings, and especially in calves and young cattle. M'Fadyean and his collaborators have recorded considerable variations in the temperatures of 75 apparently healthy calves which had been acquired for experimental purposes and which had temperature measurements

recorded twice or thrice daily over periods of 1-3 weeks. As a general rule the temperatures were higher in the evenings than in the morning. "The highest temperature recorded in the different calves during the period of observation lay between 102° and 104·9° in 27, and between 105° and 105·8° (the highest temperature recorded) in 6."

Other influences which may affect the reliability of the test are:—

Driving or moving the animals any distance, especially during hot weather.

Direct rays of a hot sun on the animals while housed.

Close and badly ventilated buildings.

Exposure to cold draughts.

Depriving the animals of water during a test, or, conversely, permitting them to drink large quantities of cold water.

Cows on official milk record test, or excessive bagging of cows. Changes in feeding or attendants may affect nervous cows. Animals which have never previously been tied or confined, or those which have been on pasture for some time, when housed for the test frequently show irregular temperatures.

The presence of any condition or disease which may affect the normal temperature of the animal.

It is, of course, evident that when a reasonable amount of care is exercised many of these adverse influences can be overcome and most of them may be reduced and guarded against. There can be no doubt that under ideal conditions the accuracy of the subcutaneous test is of a very high order. The Tuberculin Committee of the Medical Research Council stated, "The subcutaneous tuberculin test appears to be a perfectly satisfactory test for the presence of tuberculosis in cattle when carried out under the laboratory conditions of a scientific trial. It is not a satisfactory test when carried out under ordinary farm conditions; the discrepancies then prevailing are often so numerous as to vitiate the general application of the test for practical purposes." This statement is not, and does not claim to be, an original observation. One has only to remember the conditions imposed upon themselves by the Royal Commission on Tuberculosis in carrying out such tests to recognise that they fully appreciated the necessity of applying "laboratory conditions" in an attempt to arrive at a reliable conclusion. M'Fadyean, quoted by Delepine in the *Lancet* of August 24th, 1901, expressed his ". . . most implicit faith in tuberculin as a test for tuberculosis when it is used on animals *standing in their own premises and undisturbed.*"

Another, and perhaps the most serious, drawback to the subcutaneous tuberculin test is the fact that a previous dose of tuberculin interferes seriously with the action of a test if sufficient time has not elapsed between the two applications for the animal's tissues again to become sensitive. In the case of tuberculous animals which have not previously been tested with tuberculin, the subcutaneous test is probably as reliable an indicator of infection with tuberculosis as is any other test, and, indeed, more reliable than some, but it will be readily appreciated that in recent years, as a result of more frequent and regular testing of certain classes of cattle, this serious disability has become more and more evident. It has been suggested that in order to overcome this difficulty, and *if there is reason to suspect that* animals have received a subcutaneous injection of tuberculin within a short time before the test, a larger dose of tuberculin, up to four times the quantity usually employed, should be used. If such information is available—and this is by no means always the case—this precaution may overcome the difficulty in some cases, but not in all. It has long been recognised that "doping" or "plugging" with tuberculin will vitiate a subsequent subcutaneous test, and advantage is alleged to have been taken of this knowledge by unscrupulous persons to get an animal which they knew, or suspected, to be tuberculous to pass the test. However this may be, few people appear to have recognised the fact that unintentional "doping" in the form of intensive subcutaneous testing has resulted in some herds coming to be regarded as free from tuberculosis as judged by subcutaneous tests, when, in fact, up to 60 per cent., and in one case which has come to my knowledge even 100 per cent., of the animals failed to pass the double intradermal test. Some confirmation of this was obtained by *post-mortem* examination of a few of the animals, but of course slaughter of the whole of those which reacted was not permitted by the owners. In fairness to owners and to veterinary surgeons who, as a result of this, may find themselves in the unpleasant position of being required to explain the anomalous reactions, it cannot be too clearly recognised that repeated testing by the subcutaneous method *may* induce loss of sensitiveness, and therefore a lack of power to react to subsequent thermal tests.

The intradermal tests. Twenty years ago Moussu and Mantoux drew attention to the fact that tuberculin injected into the thickness of the skin itself produced in tuberculous subjects a definite local reaction evidenced by increased sensibility of the skin, by the thickening of the derma, and by the appearance during the forty-eight hours following the injection of a circular patch of œdema.

The reaction, which is visible after twenty-four hours, attains its maximum after forty-eight hours, and commences to recede during the fourth day.

The specific intradermal reaction may be obtained on any part of the surface of the body, but certain regions are obviously to be preferred. Moussu and Mantoux suggested the sub-caudal fold, while Lignières as well as Roemer and Joseph preferred the side of the neck. The lower eyelid has also been used as the site for an intradermal test.

In recent years the intradermal test has become more and more extensively employed instead of the subcutaneous, especially in the United States of America, in connection with the tuberculosis eradication schemes, largely, no doubt, because, as Ward and Baker pointed out in 1910, "The application of the classical subcutaneous tuberculin test to range cattle under range conditions is impracticable. The excitement resulting from the necessary frequent handling makes temperature records valueless."

Fretz—Inspector in Charge, Tuberculosis Eradication, U.S.B.A.I.—addressing the American Veterinary Medical Association in 1927, said, "The intradermic tuberculin test has justified its adoption by this body, on December 6th, 1920, by virtue of the fact that it can now be held definitely that

bovine tuberculosis will be eliminated by the intensive application of this test to the cattle of this country. In other words, the proponents of this test of ten years ago are to be congratulated on their keen vision and sound judgment in advancing their belief that the intradermic method dominated all other tests, in solving the most gigantic problem this body has ever been called upon to solve." We are all well acquainted with the remarkable progress that has been made in the eradication of tuberculosis in many of the States of America, and while, owing to vast differences in the conditions which obtain in that country and in others, a similar scheme might not be applicable everywhere, the results achieved in the States furnish overwhelming evidence of the accuracy of the intradermal test. In this country, until comparatively recently, intradermal testing has not been very extensively employed. This may be due in large part to the fact that conditions here have not made it *essential* to find an alternative to the subcutaneous test.

M'Fadyean and his collaborators published in 1914 the results of experiments regarding different methods of tuberculin testing artificially-infected cattle. The tests employed were the subcutaneous, intradermal in the sub-caudal fold, and the ophthalmic. They came to the conclusion that, under the conditions of these experiments, while the intradermal test was much more accurate than the ophthalmic it was much less accurate than the subcutaneous. It should be noted in this connection that the amount of tuberculin employed for the intradermal test was two and a half times that usually employed for the test, and, as will be appreciated by many of my audience, such a quantity cannot readily be injected into the thin skin of the sub-caudal fold; most of the tuberculin must therefore have been injected under the skin. The authors were aware of the fact, for in a footnote they stated, "We have followed custom in using the word 'intracutaneous' for this method of testing although recognising that it is a misnomer. The liquid in reality is left in the thin connective tissue layer between the two folds of skin." Under these circumstances the reaction more closely resembles a local reaction to a subcutaneous test than an intradermal reaction. The importance of ensuring that the tuberculin shall be injected accurately into the skin itself and not under it is well recognised, if the advantages claimed for the intradermal method of testing are to be achieved, and for this reason a smaller and therefore more appropriate dose of tuberculin is now generally employed for this purpose.

Oluf Bang and Velling tested intradermally in the neck with bovine tuberculin 119 tuberculous animals in which the disease was confirmed on *post-mortem* examination. Of these, 112, or 94 per cent., reacted. The test was repeated after an interval of seven days in 105 of the animals, when 97, or 92·4 per cent., reacted.

It was found that, in general, reactions to the later test were somewhat more marked, while in those which failed to react *post-mortem* examination showed that the disease was very advanced. In the case of the first test the maximum reaction was observed after 48 to 72 hours, while in the second test the greatest reaction was 24 hours after injection.

When a temperature reaction accompanies an intradermal test it usually begins sooner than is the general rule after a subcutaneous injection. In nearly half the animals it begins before the 6th hour.

The double intradermal test. The Tuberculin Committee of the Medical Research Council tried out a modified intradermal test at my suggestion. Some years ago I had observed that a cow which was known to be tuberculous failed to react to the subcutaneous test, and also to an intradermal injection of the tuberculin in the neck. As there was no evidence of reaction to the latter test at the end of the 48 hours, I gave a second injection of tuberculin at the same spot on the assumption that the first dose might have sensitised that particular area just as the first dose of tuberculin sensitises the eye to a second dose, thereby producing a more marked reaction. Following the second injection, there was a definite reaction. Subsequent experience showed me that even when there was evidence of a reaction to the first or sensitising dose, it was an advantage to make the second injection—unless, of course, a massive reaction was obtained to the first dose, since the reaction to the second injection was much more marked, and therefore tended to facilitate the interpretation.

The method appeared to be so promising that I suggested it should be given an extensive trial as regards reliability.

The side of the neck has been selected as the site of injection by many workers—notably Lignières, Roemer, Joseph, Christiensen and Stub, and others, who based their diagnosis upon subsequent measurements of the fold of skin into which the tuberculin had been injected. As in the case just quoted, a high degree of accuracy has been obtained by this test, as evidenced by the *post-mortem* examination of reacting and non-reacting animals. In many instances, however, the reaction following the single injection of tuberculin has been of such an indefinite character that it was decided by the Tuberculin Committee to explore the modification, which I had suggested, in an attempt to reduce this number of indefinite reactions and so to increase the efficiency of the test. Bearing in mind that, in the majority of instances, the maximum swelling following the injection of a suitable amount of concentrated tuberculin into the skin of the neck is evident at from the 48th to the 72nd hour after injection, it was decided in those cases in which the reaction at the 48th hour was not definitely positive to inject a second dose of the same quantity of tuberculin in the same spot as the first dose. It was soon found that the double injection greatly facilitated an arrival at a definite conclusion, for while it had little or no effect upon the small, hard swelling in a non-reacting animal, it sufficiently increased the swelling in a reacting animal to render a positive diagnosis possible.

The test consists of a preliminary or sensitising injection of tuberculin, followed 48 hours later by the second, or test, dose which should be injected into exactly the same spot as the first dose, that is, into the centre of the swelling produced by that dose. It was originally suggested that the area into which the tuberculin was to be injected should be shaved. Many owners seem to object to an animal being

so marked and, as it is not really necessary, this part of the procedure may be dispensed with. However, in the animals whose necks are thickly covered with hair it is advisable to clip a small area. Twenty-four hours after the second or test dose has been injected the area is again examined and measured. Non-tuberculous animals usually show little or no increase in thickness of the area, which is cold and hard to the touch and is not tender when gently manipulated between the finger and thumb.

In tuberculous animals the measurements are always considerably increased and show a varying degree of surrounding œdema accompanied by heat and tenderness. This examination is most important, as at this time a definite conclusion can usually be reached.

The desirability of the second injection is soon apparent when one has had some experience of the test. In the first place a small number of animals show no reaction to the first dose, as of course has been observed by those who have employed the one injection method, but react definitely to the second dose. Had one dose only been employed this number, which varies considerably in different herds, but which averages about 5 per cent. of the whole, would have shown anomalous results, had the test been controlled by a thorough *post-mortem* examination. But further than this, and it is an important point, animals which have actually reacted to the first dose but in which the reaction is not of an unequivocable nature,will show unmistakable evidence of reaction to the test after the second dose. The 94 per cent. discovered by Bang and Velling might well have been increased to nearer 100 per cent. had a second dose of tuberculin been employed in the manner which I have just described.

Such a high standard of testing obtains in practically all the methods which have been adopted for general use that anyone who ventures to devise a new method of testing cattle must set himself a task which aims at a standard of efficiency very near to 100 per cent.

The Tuberculin Committee of course realised full well that efficiency was the first desideratum and further that before any addition could be made to the existing official tests, there must be ample scientific evidence of the efficiency of any proposed modification. On this account they decided after numerous field trials, in which the subsequent slaughter of reacting animals is of necessity somewhat limited, to apply a crucial test. They therefore arranged a number of tests by this method which should be carefully controlled by the immediate *post-mortem* examination of both the reacting and non-reacting animals, by veterinary surgeons specially skilled in such work, and moreover that a large variety of suitable material from all the animals in both groups should be submitted to microscopic and biological examination. The method was admittedly laborious, but it was amply justified by subsequent observations, for it was found that in some cases when the animal had reacted to the test no obvious lesions could be found by ordinary macroscopic methods of examination, while by microscopic examination and by guinea-pig test the accuracy of the diagnosis was unequivocably confirmed.

The main part of the investigation was carried out at the Metropolitian Cattle Market during the latter part of 1924.

Every reasonable precaution was taken to ensure that if any tuberculous infection was present in the tested animals, whether reactors or non-reactors, evidence of its presence would be obtained in one way or another. Similar investigations were made in connection with animals at University Farm, Cambridge, from Lord Elvedon's herd and at the Field Laboratories of the Department of Animal Pathology at Cambridge.

The result of the pathological investigation can be summarised thus: —

Total number of animals examined... ...	114
Reactors	39
Non-reactors	75

Out of 39 beasts giving a reaction to the double intradermal test, 37 gave a positive guinea pig inoculation —94·9 per cent. Out of 75 beasts which failed to give a reaction to the double intradermal test, 74 or 98·7 per cent. gave a negative guinea pig inoculation.

A detailed account of the test on each individual animal was published in the report of the Medical Research Council.

Animals of all ages and of several types were included in the test and the results obtained are remarkably consistent. Young animals which were extensively infected reacted well, as did those which were suffering from an acute form of the disease. Likewise old cows, whether showing a marked or slight infection, reacted definitely.

The Eye, or Ophthalmic, Test. Vallée was probably the first to apply the opthalmic tuberculin test to domestic animals, and demonstrated that it possessed some value in the diagnosis of tuberculosis. Later he employed the test for cattle. Since then it has been extensively used in most countries in which tuberculin testing has been carried out. The test consists in the application of a concentrated form of tuberculin to the sensitive membranes which surround the eyeball. The intensity of the reaction in a tuberculous animal varies from a mere congestion of the membranes covering the eyeball to a pronounced fibrinous conjunctivitis with profuse shedding of tears and the formation of pus-like material.

The ophthalmic test, while not accepted as an official test, when used alone in the U.S.A. and in most other countries, is generally regarded as a useful adjunct to the others. It is not, however, very reliable, since false reactions may result from exposure, injury, and the presence of foreign bodies under the lids. A modification of this test, which has been found to be an improvement on the original method in which *one* application only of tuberculin was made, is to make a second application 3-4 days later. The first application sensitises the tissues of the eye and the second produces a more intense reaction in tuberculous animals. It is very necessary that the result should be observed at the third or fourth hour after the second application.

It has been generally agreed by those who have had extensive experience of the test, and who have confirmed their results by *post-mortem* examination, that, to use the words of White and McCampbell nearly twenty years ago, "The ophthalmic tuberculin test is of limited value in the diagnosis of tuberculosis in cattle."

Januschke Lid Test.—Januschke devised a test which is a combined general and local test. It consists of the injection into the subcutaneous tissues of the lower eyelid of a quantity of tuberculin similar to that used for the subcutaneous test. The injection may be made from within outwards except in animals with little connective tissue. In these cases it is better made from without inwards through the skin. A positive reaction consists of a local swelling of the lid and a general thermal reaction. The local swelling, which may attain the size of an apple, is readily compared with the other eye. The swelling usually begins six hours after the injection, but in some instances it is only definite after 48 hours. In all positive cases the swelling lasts for several days. The thermal reaction is observed by 2-3 hourly temperature measurements. The author states that there is often some discrepancy between the two reactions, inasmuch as only one or other may be observed, but a positive swelling may appear after the thermal reaction has subsided. Five per cent of the animals tested reacted thermally only, and from 10-15 per cent only locally. In the event of the reactions being indefinite in both cases, the author claims that a repeat test permits of a definite decision being arrived at.

Hilz employed a similar test. He injected ·1 grm. of concentrated tuberculin under the conjunctiva of the lower eyelid. In tuberculous animals a severe purulent conjunctivitis develops. He considered the test less reliable than the ordinary eye test, since such treatment not infrequently produces some inflammation, even in non-tuberculous animals, and as a result it is not always possible to distinguish the positive and negative reactions.

Two years ago Smythe described a test conducted along similar lines which he called the sub-palpebral test. In this case a dose of tuberculin similar to that employed by Hilz is injected subcutaneously in the base of the lower eyelid.

More recently he has suggested that although this dose is usually sufficient, the adminstration of a 2 minim sensitising dose, followed in from 24-48 hours by a ten minim diagnostic dose, is preferable. Although such a large dose of tuberculin is employed, unlike Januschke, he does not recognise a thermal reaction, but confines his diagnosis to the result of the local reaction. Januschke has admitted that in his hands the local reaction alone fails in 5 per cent. of cases.

Problems which confront the Veterinarian.

In the short time that remains, I want to deal with some of the more important problems which confront the veterinarian in carrying out tuberculin tests on a large scale and which at times cause him no small amount of trouble, but which perplex the owner of the animals and which may, and I fear sometimes do, cause him to question the reliability of tuberculin as a diagnostic agent for the detection of tuberculosis.

There are animals which react to a tuberculin test and on *post-mortem* examination show no visible evidence of tuberculosis. Why ?

Most of us who have had an extensive experience of tuberculin testing and have been able to follow a number of our reactors to the *post-mortem* room, have from time to time come across the animal which has definitely reacted to the test, but has failed to show, even after the most exhaustive macroscopic examination, any visible lesions which are regarded as characteristic of the disease. Such cases have been more frequently met with in the U.S.A. than in this country, due, of course, to the fact that testing followed by slaughter has been much more extensively practised there. During the years 1919-1923 material from some 4,066 such cases was dealt with by the Division of Pathology of the United States Bureau of Animal Industry, and of these 906, or 22·28 per cent. of the specimens were shown by microscopical examination and animal inoculation tests to be definitely tuberculous. During the first year both methods of diagnosis were applied, and of 176 specimens 85, or 48·29 per cent., were shown to be tuberculous. During the latter years animal inoculation tests were not used, and the percentage of samples proved to be tuberculous was consequently much less. Dr. Schroeder, late Superintendent, Experimental Station of U.S.A. Bureau of Animal Industry, reviewing the results of these experiments, said, "The decline in the percentage of cases proved to be tuberculous after the first year probably is due to the shorter time that was or could be devoted to the study of each case after the first year, and not to an actual decline of the percentage frequency with which the cases studied after the first years were affected with tuberculosis. But if we disregard this probability and use the percentage of cases proved to be tuberculous among the whole 4,066 studied during the five years as an index or guide, we may reasonably formulate a statement like the following :

"If we keep in mind how difficult it is to select the proper material to search for evidence of tuberculosis from the large body of a no-lesion, tuberculin reacting, bovine animal, and that at most only a few grains of material from each animal can be thoroughly studied, the concrete evidence we now have to prove that more than twenty-two out of every hundred no-lesion, tuberculin reacting animals are true cases of tuberculosis, justifies the conclusion that a great majority of no-lesion tuberculin reacting cattle are true cases of tuberculosis. It is an instance in which the known facts of tuberculosis and tuberculin sensitiveness should have prompted the conclusion before concrete evidence was obtained, and in which the concrete evidence supports the conclusion which is theoretically correct, or an instance in which the circumstantial and the direct evidence are in complete agreement."

Those who have had practical experience in the study of microscopically occult cases of tuberculosis among cattle will not fail to recognise the conservative character of these statements.

During the past few years, I have encountered only five instances in which a most thorough examination has failed to reveal characteristic lesions, examinations which have occupied several hours of tedious searching, and which certainly could not be carried out under ordinary conditions in a slaughter house. One instance is worth recording and will serve as an example. A Friesian cow which gave a positive reaction to each of the usual tuberculin tests

was selected on account of the thinness of her skin, her good condition and the excellence of her reactions, especially to the double intradermal test, as a suitable animal in which to carry out tests to determine the potency of various tuberculins. She was used for this purpose for a period of nearly two years, when she died from causes unassociated with tuberculosis. At the subsequent *post-mortem* examination search was, of course, made for evidence of the tuberculous infection, but to our surprise not a trace was visible to the naked eye. A number of lymphatic glands were, however, observed on section to be much darkened, almost plum coloured, and much more moist than is usual in normal glands. Scrapings from these glands when suitably stained and examined microscopically, showed them to be teeming with organisms resembling tubercle bacilli. Their identity as such was subsequently confirmed by animal inoculations. In the other cases of no-lesion reactors with which I have dealt the tubercle bacilli were much more scanty and in some instances were only found in smears after much patient searching. Having regard to the small amount of material which can be dealt with in this manner, a negative microscopic examination may not be accepted as indicating that tubercle bacilli are not present in the body. Animal inoculations must be employed in every instance, and in this connexion it should be noted that material from as many lymphatic glands as possible must be employed for the purpose. The insidious and often concealed nature of tuberculosis is well recognised. Calmette, in his book, "Tuberculosis in Man and the Lower Animals," says, "Infection first occurs unobtrusively and remains latent in the lymph or blood system for a longer or shorter time and discloses its existence only by conferring upon the infected organism the capacity to react to tuberculin."

"Tuberculin has frequently been accused of having given a false indication because no tuberculous lesions could be found. It was proven, however, long ago that in these circumstances the organs had not been searched with sufficient care. Whenever a tuberculin reaction is positive, there exists somewhere a follicular lesion or at least a gland containing tubercle bacilli, whose presence can be disclosed by experimental inoculation of the guinea-pig."

While it is true that in most instances material from no lesion reactors will produce tuberculosis in guinea-pigs into which such material is injected and so determine the presence of virulent bovine tubercle bacilli, this does not always happen.

The presence of tubercle bacilli in the lymphatic glands and the absence of visible lesions may be due to the fact that the infection is in its early stages, and that, given time, the infection will slowly progress and ultimately result in the formation of characteristic lesions. On the other hand, no visible lesions may be formed if the invading organisms are of low virulence; for example, the organisms employed by Calmette and Guèrin in the preparation of B.C.G. vaccine, the use of which as a preventive of tuberculosis in children and calves is being extensively tried experimentally, are known to be of bovine origin, but deprived of their power of producing the characteristic lesions of tuberculosis by prolonged growth in artificial media of a peculiar nature. The tubercle bacilli in this vaccine, when injected intravenously into young calves, may be of such low virulence that they are unable to produce the disease, but they nevertheless render the animals highly sensitive to tuberculin.

Again, tubercle bacilli of the human type do not cause a progressive tuberculosis in cattle, but animals which harbour them in their bodies may in some cases, but not in all, react to tuberculin.

Killed tubercle bacilli injected subcutaneously into cattle also cause temporary sensitiveness to tuberculin. This method of sensitisation is however of little importance now. Some years ago it was not uncommon to find that tuberculin contained appreciable quantities of killed bacilli; under present conditions of manufacture this is unlikely to happen and we need not give further consideration to this method of sensitisation.

In view of the fact that large quantities of vaccines of various kinds for the protection of cattle against tuberculosis are being distributed somewhat indiscriminately at the present time and that animals so treated may be purchased without any history of such treatment, it is well to bear in mind the fact that they may be sensitive to tuberculin and thereby give anomalous reactions to any tuberculin test.

There are animals which fail to react to any tuberculin test but which on *post-mortem* examination are found to be extensively affected. Why?

As I have already said, we cannot fully appreciate the value of tuberculin as a means of diagnosing tuberculosis unless we appreciate its limitations, and this apparently extraordinary phenomenon affords an excellent example. As I mentioned in the early part of my discourse, the body tissues of an infected animal throw out, as a means of defence, substances which break down the tuberculin formed by the organisms of which they are the unwilling host. In the case of animals whose response in this direction is vigorous and whose body cells are putting up a fine defence to the invader, these substances or lysins can cope with the additional tuberculin used for the test. In the case, however, of poor, weakly, extensively infected animals the body cells have made all the response of which they are capable and are too tired, too jaded, to respond to any further stimulus which the tuberculin employed in the test might call forth. This explains, I believe, why such animals will respond to a severe *local* test, such as the double intradermal, long after the strength of their tissues to respond to a *general* test like the subcutaneous has passed. But, of course, in time they may fail to react to any test, either local or general.

There are animals which pass a test and go down at the next test. Why?

This, one of the most annoying experiences which an owner can suffer, may be due to several causes.

The animal may have become infected between the two tests or, while infection may actually have taken place before the previous test, the animal may not have become sensitised or, in other words, have developed the power to react to tuberculin. This question of the so-called latent or pre-sensitive period has received considerable attention during recent years. It has not

infrequently happened that an animal purchased for inclusion in a tubercle free herd and certified as having recently passed a tuberculin test, has been found to react to the first test after purchase. If the trouble ended here it would be so bad, but in many instances there is reason to suspect that in the meantime other animals in the herd have become infected. It cannot be too strongly urged that when animals are introduced into a tubercle-free herd, every endeavour should be made to keep them isolated from the herd for as long a period as possible and, in any case, until they have passed a retest. The cost involved in such a procedure is usually infinitely less than that incurred when the infection is spread by such an animal. It is not sufficient that an animal is certified as having passed a test; it is far more important, if such a course were practicable, that, as Begg and Weir suggest, such animals should carry "a guarantee of some reliability that they had not been exposed to infection, or a note sufficiently descriptive of their history and origin to enable judgment."

The length of time that elapses between the act of infection and the animal's capacity to react to tuberculin must depend to a large extent upon the nature of the infecting dose (the amount and the virulence of the organisms), and upon the animal's ability to cope with the infection.

It is sometimes imagined that the period which elapses between the time of infection and the development of the capacity to react to tuberculin is invariably longer in animals which possess a high degree of resistence to infection than in those which are highly susceptible. This, however, is not the case, for it is not infrequently observed that animals which have reacted violently to the test have shown on *post-mortem* examination that their tissues had held the disease well in check.

It is safe to say that in the vast majority of instances the so-called latent period is relatively short. M'Fadyean and his collaborators showed that calves which had been infected by injecting the infective material under the skin reacted vigorously one month later. It is certain that in many instances animals so infected will react to tuberculin a week after; while I have found recently calves which have been fed with avirulent bovine tubercle bacilli will react to the double intradermal test after three weeks.

There are animals which react to a test and then pass several. Why?

In the case of herds which are regularly submitted to tuberculin tests and from which the reactors are immediately removed, it not infrequently happens that odd animals fail to subsequent tests. The occurrence of such reactors may be due to the fact that the animals were in the incubative stage of the disease; but it must be remembered that an animal may fail to react to any of the tests owing to the temporary arrest of the disease. In cattle, as in man, there is a strong tendency towards recovery from infection with disease. Nature tends to enclose disease areas within a wall of fibrous tissue which does, temporarily at least, check the progress of the disease. The healed-up area may, however, harbour live tubercle bacilli in the interior. The progress of the disease may thus be affected for varying periods of time and then again break out in a progressive form when it will cause the animal to react to tuberculin.

Further, it must be remembered that if we are to free a herd of tuberculosis, it is not sufficient to remove the reacting animals, but that the most thorough disinfection of the premises is essential after each retest, so long as reactors are found.

Much of the success which has attended the rigorous application of tuberculin tests in the United States is no doubt due to the fact that the slogan, "Once a reactor, always tuberculous," has been acted upon, and further that there are no "doubtful" reactors. An animal which fails to pass a test is condemned and subsequent *post-mortem* examinations have justified this course. I am afraid that with us the doubtful reactor too often receives the benefit of the doubt.

There are instances in which the animals in a herd have passed the subcutaneous test repeatedly, so that the herd has come to be regarded as free from tuberculosis. At a subsequent test, using the double intradermal method, many react. Why?

During the past few years, since the double intradermal test came to be more extensively used, I have unfortunately met with a number of such instances. As a rule they have been herds supplying graded milk, and the animals have, of course, been tested at regular intervals by the subcutaneous method; there have been no reactors for a period covered by several tests, and the herd has naturally come to be regarded as free from tuberculosis. At a later date it has been decided to apply the double intradermal test instead of the subcutaneous, following which many of the animals, even up to 100 per cent., have failed to pass in many instances to the first or sensitising dose alone. Such an experience cannot be explained by supposing that all the animals have become infected in the relatively short period which has elapsed since the last subcutaneous test, or that their lesions were dormant, for it has been shown in some instances that they still fail to react to that test even when considerably larger doses of tuberculin have been employed. It is, of course, well known that the subcutaneous test is unreliable if a previous test of that kind has been applied within a few weeks. In these cases, however, a period of six months has sometimes elapsed since the last test. It is equally well known that tuberculous animals may be "doped" against the subcutaneous test, by using large quantities of tuberculin shortly before. In these cases it can only be supposed that the animals have been unintentionally "doped" by means of repeated subcutaneous tests.

The disease has been found in varying stages in all such animals that have been examined *post-mortem*.

My time has nearly expired and these cursory remarks must be drawn to a close, but, as at the commencement I referred to the factor of paramount importance in relation to tuberculin testing—tuberculin, so I would conclude.

You will have gathered, from what I have said, that we have at our disposal a method of determining the presence or absence of tuberculous infection which exhibits a degree of accuracy little short of 100 per cent., but

which calls for no small amount of skill in its application and interpretation if reliable results are to be obtained. But unless the tuberculin upon which we primarily depend is of adequate potency, all the skill at our command cannot render the test satisfactory. Unfortunately all tuberculin supplied for this purpose is not of equal potency. This, of course, is quite wrong. Every veterinary surgeon who carries out these tests and who is responsible for an accurate determination of the results has a right to expect that the material with which he is provided for the purpose is capable of fulfilling that purpose. So, too, has the owner of the animals, to whom the results are usually of such momentous importance. There is, unfortunately, no provision for the sale of tuberculin of guaranteed strength only, with the result that enormous differences exist in the strength of tuberculin sold for the purpose. During recent years the necessity for all tuberculin used in the diagnosis of tuberculosis in cattle being of proved value has been urged repeatedly, but so far without result. I am convinced that with a tuberculin of adequate strength the "doubtful" reactor would almost be eliminated.

Mr. JOHN SPIER, Newton, said that those who had listened to Professor Buxton's lecture that day would go away with some new ideas. There was one thing which he had advocated, and upon which there seemed to be considerable difference of opinion amongst the veterinary profession, and that was the standardisation of tuberculin. He was pleased to hear the Professor advocate control of standardisation. He regretted that there was not an even larger number of farmers present.

Proposing a vote of thanks to Professor Buxton, the Chairman said it was up to them to try to spread the use of the intradermal test in their herds to the exclusion of the subcutaneous test, which had held good up to the present.

The meeting concluded with a vote of thanks to the Chairman.

ABSTRACT.

[**Variations in Antirachitic Vitamin in Cod-Liver Oil, Milk, and Butter.** K. H. COWARD (*Quart. Jour. Pharm.*, I., 4, 1928). Ex *Pharm. Jour.*]

In the examination of many samples of cod-liver oil, milk, and butter in the Vitamin Testing Department of the Pharmaceutical Society's Pharmacological Laboratories it has become increasingly evident that each of these substances may vary enormously in its antirachitic potency. In particular, it is patent that the widespread belief that milk and butter are rich sources of the antirachitic vitamin is largely erroneous. One sample of milk examined in the summer was practically devoid of this factor. Among the selected oils which have been examined in four samples the units of antirachitic activity per gramme were 150, 100, 70-80, and 50 respectively. In butter the figures were :—April, 0·8; June, 0·8; July, 0·8; and March, 1·0. In milk :—London supply (November), nil; August, 0·2; experimental farm (August) trace. It is generally believed that a diet containing plenty of milk and butter affords a

(*Continued at foot of next column.*)

National Veterinary Medical Association of Great Britain and Ireland.

Discussions on Papers Presented to Congress.

No. 1.—Foot and Mouth Disease.

By J. O. POWLEY, M.R.C.V.S., Superintending Inspector, Veterinary Department, Ministry of Agriculture.

The first of the discussions on Congress Papers concerned that on Foot-and-Mouth Disease, presented by Mr. Powley, and the subject attracted a large attendance to the County Hall, Ayr, on the morning of Monday, September 2nd, 1929. The session was presided over by Dr. O. Charnock Bradley (the retiring President), who said at the outset : It is with great pleasure that I call upon Professor Gaiger to open the discussion on this extremely valuable paper of Mr. Powley.

Professor S. H. GAIGER (Liverpool) : A paper written by Mr. Powley, with his extensive experience as an administrative officer of the Ministry of Agriculture, upon the clinical and field aspects of foot-and-mouth disease, cannot fail to excite our interest, because we know that he is a master of his subject. Mr. Powley's views and experiences will be educative to the general practitioner, as he deals fully with the symptomatology and differential diagnosis of the disease in the various species of animals.

It is not an easy matter to open a discussion on a paper like this, if by discussion we mean taking up debatable points, because over the whole ground covered by Mr. Powley I have been unable to find any point with which I am in disagreement. I intend, therefore, to interpret my duties, in opening the discussion, as being to focus attention on one or two aspects of the disease and its problems as raised by Mr. Powley.

I am in agreement with him that we are not met here to discuss the policy of the British Government in controlling this disease, though I fancy that, were we asked to express an opinion, it would be one of whole-hearted endorsement of the policy of the Ministry of Agriculture, for the reasons given in the quotation which Mr. Powley gives us from Sir George Brown as far back as 1870. I have recently had experience of foot-and-mouth disease in a country in which the scourge is enzootic and these experiences have left

(*Continued from previous column.*)

sufficiency of the fat-soluble vitamins A and D. However, this is often not true for D, so that to ensure the presence of enough of this vitamin, it should be added specifically in one of the available forms. In the majority of cases of advertised food or medical preparations said to contain a proportion of vitamin D no indication is given of the actual addition made. In so far as vitamin D in such preparations is intended to take the place of cod-liver oil, it ought to be present in sufficient quantity so that when the full daily dose has been taken the subject has received as much vitamin D as he would have received in taking an ordinary dose of cod-liver oil. It may fairly be suggested that the advertisement of any preparation as having vitamin D added so as to substitute cod-liver oil will be misleading unless the amount present in the daily dose for a child is 150 units, or for an adult 300 units.

me more than ever a believer in the slaughter policy for Britain, always provided that the country maintains an adequate and efficient Veterinary Service to pounce on initial outbreaks and prevent them spreading. (Applause).

The viability of the virus.

When I first commenced teaching the subject of animal contagious diseases, a little over twenty years ago, it was the custom to lay emphasis upon the fragility of the foot-and-mouth disease virus outside the animal body. Research work in many countries in the world has shown us how false such a conception can be, and we now know that under certain circumstances the virus is endowed with powers of existence bordering on the miraculous. Is it not almost incredible that a form of life so minute as to be beyond the powers of our best microscopes, can be still alive and virulent after being kept chemically dry for over two years? Dried in the ordinary atmosphere it can live nearly half a year.

It is interesting to note that the virus has acquired the power to remain alive for long periods in or on just those substances which may enable it to gain access to other animals, such as hay, bran, bone-marrow, hair, soil and manure. In the light of recent research it is perhaps not to be wondered at that a field observation is on record to show that 345 days after slaughter of stock and disinfection of buildings, animals put into the premises have become infected.

Multiplication of the virus.

We know that the virus cannot increase in quantity outside the body of the living animal. All attempts at artificial culture have failed, excepting perhaps recent attempts where a medium containing living tissues has been used. The living animal is the only factory for the manufacture of the virus. But what a factory it is! It produces virus in such quantities and in such concentration, in the fluid of the vesicles, that this fluid when diluted ten million times remains infective. This means that if a tablespoonful of vesicle fluid were diluted with water it would make over 30,000 gallons of infective liquid of which only a minute quantity would be required to produce infection by artificial inoculation. This vast concentration of virus is produced by the living animal's system in a matter of a few hours.

The plurality of the types of virus.

You have doubtless all read about the now known three types of virus, types which are serologically distinct and yet produce symptoms which are clinically indistinguishable. This means that an animal can be made to pass through three attacks of foot-and-mouth disease in immediate succession if infected by the A. B. and C. types in turn, since an attack by one type leaves no immunity against attack by the other types.

Here in Britain there appears to be one type of virus mainly at work, so far as investigations have gone, namely, the Vallée "O" type corresponding to the "A" of the A. B. C. grouping. The "B" type (Vallée "A") has only been met with once. Whether or not the "C" type occurs here, remains to be seen.

We have all been made familiar with reports from the Continent of animals which have become naturally infected with foot-and-mouth disease two or three times over in a fairly brief period, as, for example, three times in one year, and this was supposed to illustrate the brief duration of the immunity left by a natural attack. It now appears tolerably certain that these were instances of successive infection by more than one type of virus. Recent observations have shown that after infection cattle are solidly immune to the same type of virus for at least three months, that they only lose their local immunity to inoculation after seven months, and their general immunity after eighteen months or more.

So far, the "C" type of virus has not been found in Britain. Its discovery on the Continent has been too recent for us to know whether any past outbreaks here have been caused by it. The discovery of three types, however, lends an importance to the typing of viruses from natural outbreaks in Britain which will be at once apparent, as possibly leading to more light being thrown upon the external origin of our initial outbreaks. It has been found on the Continent that there is no constancy in the geographical distribution of the three types. The existence of a third serological type of virus opens up a very interesting further line of research, which is being pursued, as, for example, the differences between types other than serological differences, differences in viability, etc. Can we suppose that the number of types is limited to three? What types exist in various continents and what are the types which are prevalent in the South American continent, from which there is good reason to believe some of our initial outbreaks have originated?

There is, of course, nothing unique about the discovery that this disease has more than one serological type of virus. From our knowledge of animal pathology it is almost what one might have expected to find. It is many years since it was shown that swine fever in East Africa is caused by a different type of swine fever virus from that which causes swine fever in Britain and that recovered pigs in East Africa can go through a second attack of swine fever when exposed to infection by the British virus. Similarly in bovine pleuro-pneumonia we know the "X" and the "Y" types of virus, neither of which confers immunity against the other. Possibly the position is the same with regard to fowl plague.

The question of "carriers" of the virus.

From what has been discovered regarding the longevity of the foot-and-mouth disease virus outside the body, it will be seen that we are no longer under the necessity of assuming that carriers *must* exist if we are to explain certain outbreaks. All the evidence now available tends to lead us to the conclusion that neither recovered animals nor vermin on the farms play any important part as carriers.

The power of survival of the virus *in* the body of the living animal is remarkably short, the animal's system so quickly acquires the power of killing it off. It has been shown that a few days after the height of an attack an animal may cease to be a danger to his fellows. There is the possibility of survival of virus in any part of the body to which the body fluids have limited access, and the American Commission succeeded in finding one animal from which foot scrapings yielded virus 34 days after the animal was infected.

The part which rabbits, rats, mice, etc., play in the spread of infection is very probably small and unimportant, though, as Mr. Powley points out, perhaps not negligible. These small animals can be artificially infected, but so far the disease has not been shown capable of spreading as a natural epizootic in these species. (There is one unimportant species which is an exception to this, as will be revealed in the next report of the Foot-and-Mouth Disease Research Committee). That rats should be found infected in natural outbreaks amongst the larger animals is not to be wondered at on account of the habits of the rodents. That they may infect healthy large animals by mechanical means is possible. That they are true " carriers " has not been proved and seems unlikely, so far as experimental work has gone.

The origin of initial outbreaks in Britain.

This is a question of paramount importance to this country. Research work has shown that it is possible for the virus to survive long enough to reach Britain even from distant countries in hay, bran, hair, clothing, blood, bone-marrow, etc. The various Orders of the Ministry of Agriculture relating to the importation of raw tongues, carcases, packing hay or straw, and the boiling of food-stuffs show that the authorities are ready enough to try and profit by the lessons taught by research. But it is one matter to know how infection can, and doubtless does, arrive here, and another matter to prevent its arrival.

It is instructive to note the origin of outbreaks in the United States, which is sufficiently removed geographically from other countries to rule out wind and birds as sources of infection. The 1908 American outbreak arose from contaminated small-pox vaccine imported from Japan several years previously. In 1915 an outbreak occurred in Chicago following the use of contaminated swine fever serum. The 1924 outbreak on the western sea-board arose from a ship's garbage fed to pigs on shore ; the garbage contained meat scraps from carcases purchased in a foot-and-mouth disease infected country. The recent outbreak at Los Angeles has been definitely proved to have arisen in the same manner, the meat having been taken on board an American ship at Buenos Aires. The American outbreaks afford us a remarkable instance of longevity of the foot-and-mouth disease virus and point unmistakably to South American meat carcases as a source of danger.

Considering all we now know regarding the viability of the virus, we need no longer wonder how it is that Britain continues to have a succession of initial outbreaks. The wonder is that we do not have more of them. Short of cutting off all commercial intercourse with infected countries we simply cannot escape. Since we cannot exist without our great trade relationships, the only wise plan is to insure against the spread of initial outbreaks by keeping the most efficient State Veterinary Service which it is possible to organise. We paid heavily in 1923 for our neglect to do this, but if the millions then spent have shown the country the only true way of prevention it has been money well spent.

In the few minutes left of the brief time allotted to me, I wish to say a few words on the possibility of initial outbreaks arising here from imported chilled beef from South America. As some of you know, I spent a period of nearly four months last year investigating the position regarding foot-and-mouth disease in Argentina. I was given a free hand by the Argentine Government. All records were freely placed at my disposal. I went where I wished and when I wished, and conducted my enquiry uninfluenced by any consideration other than to get at the truth.

I travelled extensively in the country, visiting and examining everything having any bearing on the subject of my investigation, from the rearing of cattle on the estancias in various provinces to the loading and storing of the quarters of beef on the ships engaged in the chilled beef trade. The object of my visit was to study and report to the Argentine Government upon the position with regard to foot-and-mouth disease in Argentina, and its bearing upon the export of chilled and frozen meat. This I did, and the Argentine Minister of Agriculture agreed to a copy of the report being handed to the British Ministry of Agriculture. This, I feel, proves that Argentina has shown in this matter a real desire to meet our wishes. (Hear, hear).

The point which concerns Britain is whether chilled carcases are a source of danger to us through being exported with the virus of foot-and-mouth disease in their bone-marrow or minute blood vessels. Let us examine the presumptive evidence. The presence of foot-and-mouth disease in Argentina is now freely admitted. The fact that the virus, if present in the carcases, is able to survive for a period of over ten weeks is a scientifically proved fact which cannot be disputed. There is suspicion that certain outbreaks of foot-and-mouth disease in Britain have originated from South American carcases or their by-products. In the United States two outbreaks have been definitely traced to carcases shipped from infected countries, and in one of these outbreaks (1928) the carcases came from Buenos Aires. It will probably be agreed that the presumptive evidence is pretty strongly in favour of the view that virus imported by us in chilled beef has been the cause of outbreaks of the disease.

It would not be possible here, from lack of time, to give even a brief summary of my Argentine report, but I may say that I considered no other conclusion was possible than that under the circumstances prevailing *at that time* it was impossible to avoid exporting carcases of animals killed in the incubative stages of foot-and-mouth disease. Inspection of export-cattle on the estancias might be perfect, but the cattle were conveyed for, say, 36 hours in undisinfected waggons to the frigorificos and might be detained 48 hours there before slaughter. Many export-cattle (300,000 per annum) arrived at the frigorificos *via* the great cattle market of Liniers, and these cattle were not subject to estancia-inspection, though they had to be accompanied by a certificate of inspection carried out when leaving the market, this market being, however, an almost certain source from which to pick up infection.

There was at that time no effective isolation in the corrales of the frigorificos as between export and other cattle awaiting slaughter, and there was not much difficulty in several of the frigorificos in demonstrating foot-and-mouth disease in cattle on occasions where they were left seven or eight days prior to slaughter.

Fortunately the Argentine Government was, and is, anxious to do everything possible to improve the position and it displayed a praiseworthy energy in getting to work on the various recommendations. The consequence now is that I believe the position at the present time shows considerable improvement and there seems to me little doubt that with the lapse of time the danger will become less and less so long as the precautions in vogue, and coming into vogue, are maintained. The main concern of Britain is that the disease be controlled within the boundary of the frigorificos. The control of the disease in other parts of Argentina is no concern of this country.

The chilled beef trade is a wonderful industry and one of vast importance to Britain. Enormous British interests are involved. Argentina sends us the very best beef for consumption here, and keeps the poorer grades for its own consumption. It is rare to taste a good piece of beef in Buenos Aires.

The veterinary inspection inside the frigorificos was excellent and rigid. I gained a very high impression of the Argentine veterinarian. (Applause.)

The CHAIRMAN: The paper is now open for general discussion.

Mr. W. JACKSON YOUNG (Newcastle-upon-Tyne): Mr. Powley is an admitted expert on foot-and-mouth disease and he has given us a very valuable paper: I consider it a very valuable addition to the ever-increasing literature on foot-and-mouth disease. I find myself in full agreement with what he says. He has given us a paper of historic importance.

I happen to be a very wide reader and I have never come across, in veterinary literature, a description of Fen foot-rot. During the War, I came in contact, in Lincolnshire, with Fen foot rot. I happened to be in a district in which numerous outbreaks of foot-and-mouth disease had been confirmed, and I was suddenly confronted with this Fen foot rot. I had seen a lot of contagious foot rot in the North of Scotland and elsewhere, but I have never before seen the Fen type described, and Mr. Powley has given us a very clear description of the disease, for which, personally, I am very grateful. He has also presented us with a description of a disease in which I take more than a passing interest, *viz.*, vesicular stomatitis, on which there is a vast and increasing literature, the bulk of which comes from the United States of America, and I cannot help thinking that what the Americans describe is not the same condition as that which we meet in this country. I have seen a lot of vesicular stomatitis in connection with the examination of Irish animals imported into this country, but I have never seen the condition in a horse.

Vesicular stomatitis is very difficult to distinguish, at times, from foot-and-mouth disease, though I do not find any great difficulty so long as the vesicle on the tongue is unruptured. I find that there is usually no rise of temperature in vesicular stomatitis. I agree with Mr. Powley's description of the rupture of the vesicle. Some years ago, when one was allowed to write in the veterinary press anonymously, I recorded, under a *nom de plume*, that method of the rupture of the vesicle, and also gave evidence on that point to the departmental Committee that investigated stomatitis of the domestic animals. The rupture takes place at a small hole in the centre of the vesicle, and a considerable amount of pressure has to be exercised.

The diagnosis of foot-and-mouth disease is not easy. At the International Veterinary Congress of 1914 the statement was made in one paper presented for discussion that it was simple, but it is not easy—at times it is very, very difficult, even for those of us who see much foot-and-mouth disease. The combination of lesions adds to the difficulty. In this county five years ago I had a fair amount of foot-and-mouth disease, and I had experience of the steps that were taken then to isolate the infected premises and in-contact animals. In the midst of my perplexities, which were numerous, a report case came in one day from a farm not far from here. I went out to the place and found that about twenty cattle were affected with foul of the foot; in fact, every bovine animal on the place was affected. These animals were salivating; they showed "paddling" movements of the feet, and there were necrotic lesions on some of the teats, but examination of the mouths revealed nothing. The County Veterinary Inspector and I were puzzled, and took it upon ourselves to come to a decision as soon as possible. To the great astonishment of the farmer we asked him to liberate the animals from the bindings and turn them out, and when we saw the animals walking, or trying to walk, we were certainly helped to come to a definite conclusion, but this experience does illustrate the difficulty presented by the combination of lesions. Three years ago I went to a place away up in the Dales and found a cow with an ulcer on the tongue and lesions on the teats, and this cow had foul in the foot. Her temperature was high, her breath had a very bad smell, and locally the opinion was that the animal had foot-and-mouth disease. The first thing I heard was a genuine, old-fashioned "smack." I examined the cow carefully and I came to the conclusion that foot-and-mouth disease did not exist. The animal died next day, and on *post-mortem* she exhibited lesions of necrosis of the alimentary tract, liver and rumen.

There is not much to discuss in Mr. Powley's paper, because it is full of hard facts. But being in the land of Burns I think if this man, who was born near here, had rhymed about foot-and-mouth disease instead of "toothache" he would have called it "the hell of all diseases"—(laughter),—because there is no doubt that it is a terrible business. It upsets the finances of the country, it interferes with the officials private arrangements (laughter); I speak feelingly, and I know I have a number of colleagues here to-day who agree. I took a few days' holiday at the beginning of this year, and had a message recalling me from the South to the North of England and had to pay the cost of the journey out of my own pocket. So I do think it is the hell of all diseases. (Laughter.)

I was very interested in Professor Gaiger's remarks about the viability of the virus; it is one of the most interesting things to study—the action of the various disinfectants on the virus. It appears that glycerine will have to take a back seat as a disinfectant: it kills neither vaccinia nor foot-and-mouth virus. I find myself in full agreement with the views of the First Progress Report of the Scientific Research Committee set up by the Ministry with regard to the existence of foot-and-mouth disease in small animals such as rabbits, hares and hedgehogs.

I do not think they need concern us very much in regard to the dissemination of disease.

I personally wish to thank Mr. Powley for the most excellent paper he has presented to this Association. (Applause.)

Mr. F. DAVIDSON (Dumfries): It was with great pleasure that I read Mr. Powley's paper, because in the past I had the pleasure of working under him and I know him to be a very thorough and practical gentleman, especially as regards foot-and-mouth disease.

Like Professor Gaiger, I am afraid there is not much to discuss in the paper as regards pulling it to pieces, because I am in entire agreement with the author. The first point in his paper upon which I would remark, is the tremendous wastage of livestock from foot-and-mouth disease. I am in the position of having had to attempt to isolate pedigreed animals and also to carry out the slaughter policy of the Ministry, and having had experience of both forms of control I would like to say right away that at the present moment in this country there is no other policy possible than that of slaughter.

In Hong Kong I managed a herd of dairy cattle and I treated them for foot-and-mouth disease. I think I may say that that form of treatment has never been surpassed in efficacy, and yet I can only claim that it cuts the losses by fifty per cent. That treatment was the injection of trypan blue. Since I tried it out, its value has been confirmed in India, yet in spite of the success achieved I cannot say that I am in favour of the adoption of the isolation policy in this country. You must remember that foot-and-mouth disease is really a septicæmia: the vesicles are only symptoms: the whole system of the animal is affected, and it is not during the first months of the disease that you see the damage, but after the first eighteen months. One herd of which I know was isolated in the North of England but it was against my wish that it was done. The herd was ultimately slaughtered and a claim for about £2,000 was made against the ministry.

Mr. Powley has given a very clear resumé of the symptoms, and one which will be very useful to practitioners. I agree with Mr. Young that foot-and-mouth disease is very difficult to diagnose. My experience in Hong Kong was especially with rinderpest, and on my first outbreak of foot-and-mouth disease I rushed for my Hutyra and Marek; on my second I was still cautious; by my fourth I was supremely confident in diagnosis and in my sixth I made a mistake. (Laughter.) The first symptom in milch cows is cessation of milk secretion, which you will find even before the rise of temperature: it is only a matter of hours, of course. Passing on to pigs, if you read Mr. Powley's description of the lesions in pigs, you would say that the disease is very easy to diagnose in those animals, but personally I have found foot-and-mouth disease in pigs the most difficult of all to diagnose—you get so many other foot conditions. One point Mr. Powley might have stressed in pigs was the presence of lesions on the mammæ; I consider them very characteristic, but they are very often missed.

Coming on to sheep, had I been Mr. Powley, I would have laid more stress on the dental pad; I consider lesions there are more common than he seems to think.

The information he gives concerning the *post-mortem* examination of cows killed in the early stages of the disease is very clear and useful. I have found that a large number of cows that had had foot-and-mouth disease and recovered, subsequently suffered from heart disease, and there is no doubt that the heart structure is affected. I believe that in the cases in which human beings have contracted the disease, heart disease is one of the effects left.

To come to differential diagnosis, I would merely refer to the stomatitis of which Mr. Powley speaks as occurring in this country. In the outbreak of 1923-4 I saw a lot of this in the North of England, and Mr. Powley has accurately described the condition, though I think he might have stressed the lack of general symptoms in stomatitis, while in stomatitis the depth of the ulcers is a guide and the fact that they only heal round the sides.

To come to the rat, in 1923-4 I sent the first rats up to the Ministry from an outbreak in Durham. I still have a feeling that those rats carried the disease from the neighbouring farm where an outbreak had been six weeks before, and, considering that disinfection had been performed there, I was not suspecting the rat as a mechanical carrier, but as a natural one. But the evidence since then has been all against it. There is no doubt that the virus lives for a long time under given conditions.

Major D. S. RABAGLIATI (Wakefield): I think we ought to be very much congratulated on having secured Mr. Powley to prepare this most interesting paper for us. (Hear, hear.) Owing to the rules of the Association, his paper must be very limited in extent, but I think that he has produced what we may call a veritable *multum in parvo*.

Of late I have had the pleasure of working in the same district as that in which Mr. Powley holds sway and I think that there is no man in this country whose opinion on foot-and-mouth disease is more worth having. (Applause.) I do not think he mentioned the possibility of human beings being infected, and I should like his opinion on this point; does he think that there is any distinct evidence of the human subject having contracted foot-and-mouth disease in this or any other country? A point he might have stressed more is the occurrence of udder lesions in cows. I remember a case not long ago where there were about 36 milking cows on the farm and several cows were found one morning to have very marked vesicles on their teats and udders. The milk was drawn from those cows and sold, and the same morning the farmer called in his own veterinary surgeon, who diagnosed foot-and-mouth disease. This was reported to the authorities and the outbreak was confirmed right away. This man had only suspected cow-pox. Whether the cows were showing the mouth lesions in the early morning I do not know, but in the afternoon there were several of them with definite mouth lesions present.

This leads to another peculiarity. There was an outbreak where the milk was collected and distributed and yet there was not a single fresh outbreak from that farm to another or neighbouring one, though there were a number of small farms round about. I think one pig only was affected on adjacent premises. Yet there were people going from the farm premises to other farms collecting milk. This is a most peculiar feature of foot-and-mouth disease. I remember, years ago, when I was in Egypt,

and I had charge of a number of serum cattle, that we had an outbreak of foot-and-mouth disease there, and in Egypt the slaughter policy was not carried out. The disease was probably more benign than in this country, and was usually left till it gradually died out. One could go round in the early morning and find the cattle perfectly all right and in the afternoon find numbers showing unmistakable signs of foot-and-mouth disease—which shows the very great rapidity with which the lesions seem to develop.

Professor Gaiger mentioned the possibility of foot-and-mouth disease being spread by serum. In this outbreak the serum (it was anti-cattle plague serum) was said to have produced the foot-and-mouth disease in the animals inoculated. The result was that we had to close down the serum-making for some time.

I had definite evidence of cattle being affected twice within six months: cattle showing a typical course of the disease on each occasion; whether it was the same strain of virus, or one of the other strains, responsible for the second attack I do not know.

In Egypt I made *post-mortem* examinations on calves; I do not remember any fully-grown cattle dying. They were found to have marked inflammation of the first and fourth stomachs which, no doubt, was the cause of death.

I look upon the Boiling of Animal Foodstuffs Order as one of the most useful in the prevention of disease—if it is carried out. In the district where I am working we have a large number of leaflets summarising this Order, and often we give these leaflets to the local sanitary inspectors. I think it is a very great thing if we can get the local Sanitary officials to co-operate in the prevention of this disease. (Hear, hear.)

I think that Mr. Powley will agree with me that the private slaughterhouses, especially private slaughterhouses on farms, are probably one of the most potent causes of the spread of foot-and-mouth disease and also of other contagious diseases, and that if one were to get rid of them it would be a very great help in preventing the spread of disease. In Scotland these private slaughterhouses are much rarer than they are in England, and I have often wondered if to this fact may be attributed the comparative rarity of outbreaks in Scotland. I should like to add my thanks to Mr. Powley for his excellent paper. (Applause.)

Mr. Hugh Begg, County Veterinary Inspector, Lanarkshire:—Although we have not had a great deal added to our knowledge of foot-and-mouth disease during the past few years, I think it a remarkably good thing for the profession that we should have a paper on this subject at our Annual Congress.

It is peculiarly true when you meet the man in the street and it is known to him that you belong to the veterinary profession, he will say "What about foot-and-mouth disease? Are you having much trouble with it just now?" This disease is the one that bulks more largely in the mind of the man in the street than all the other work that keeps us busy, because it is well reported in the press.

We are very happy in having an experienced man like Mr. Powley to give us the results of his practical experience of dealing with this problem, and equally fortunate in having Professor Gaiger to indicate, in his characteristically clear way, the lines of thought we should pursue in connection with it.

I have been struck by some of the things that Professor Gaiger said: for example, how quickly the bovine body acts as a factory to develop the infection as soon as it receives it, and how quickly the animal develops such a concentration of anti-virus within the body as to render it incapable of acting as a "carrier" within a few days, and yet, hidden away in the muscles and the bones, we have a great argument touching on that phase of the matter.

The viability of the virus in the bones has been definitely proved and we have a greatly needed Order for boiling and sterilising that material in order that there may be no outbreaks set up by the dispersal of bones, &c. In the back of my mind I attribute this advance to the discovery that Mr. Rodger of the Ministry made a few years ago when he found that the hair carcases of pigs from the Continent were infected with foot-and-mouth disease. He detected them in a lorry approaching a bacon factory. That blazed the trail and it is now essential that we should follow this new line of thought and act on it. It does seem to me that this is the fashion just now and there is, indeed, good reason for following it.

I have often thought, when we had those outbreaks in Lanarkshire, that the rat might have been more seriously to blame than is generally supposed, either as a victim or a simple carrier of the disease. There is no animal so plentiful and ubiquitous as the rat on those farms and if a man can lift his walking stick on an infected farm and introduce the disease elsewhere thereby, I can see no reason why a rat should not carry the infection. Rats, disturbed by disinfection, migrate to neighbouring premises where they are not going to be disturbed.

Another thing that operated in Lanarkshire, I think, was the vagrant individual who came into the byre to sleep and got away before the people were up.

Two things stand out in Mr. Powley's paper, in my view. There is the question of the rat and the fact that a dilution of one in ten million does not kill the virus. Professor Gaiger has illustrated that further by giving a very homely example in measurement of it: when they endeavour by simply spraying straw and hay, harness, &c. to prevent such material from proving infective in the new area to which it goes, and the question arises, "how can they adequately dilute the infection in hay, &c. when they tell you that a dilution of one in ten million is sufficiently strong to re-create the disease experimentally?" Yet the Government depends on a simple spraying in these cases. I hope it is sufficient disinfection that the solution on the outside should make the place wet. Professor Gaiger has said that the virus lives well in the dry state.

People who have treated their animals suffering from the disease instead of slaughtering them are, I think, more sorry than they care to admit. Most people who have brought animals through foot-and-mouth disease, though they may contrive to hide their own feelings, would, on a second visitation, have them slaughtered out. I have had definite experience of that.

Captain R. Simpson (Carlisle): I have only one or two very short observations to make. Mr. Powley has given us a very useful description of the lesions in cattle and in sheep, but he omits to mention that the goat is subject

to the disease and exhibits the same symptoms and lesions as are found in cattle.

I have had experience of an outbreak where the affected animals and incontacts were slaughtered and a careful disinfection carried out and then we were faced with the fact that a goat was still alive on the premises and showing extensive lesions of foot-and-mouth disease. This animal had been concealed by the owner and its discovery necessitated a further disinfection of the premises. The outbreak referred to is the only one in which I have seen a goat affected.

The other observation which I would like to put forward is in regard to a form of a typical lesion which one very occasionally finds in cattle; an intense congestion of the hard palate, developing two or three hours previous to the eruption of the vesicles. The appearance of this condition is somewhat confusing and liable to suggest stomatitis, rather than foot-and-mouth disease.

I must thank Mr. Powley very much indeed for the very practical paper which he has put before us.

Mr. D. B. RODGER (Ministry of Agriculture): I have enjoyed my colleague's paper very much. I had the privilege of visiting the Argentine last year at the same time as Professor Gaiger was there, and was interested in his quotation of the two outbreaks in the United States in 1924 and 1928. Both of these were undoubtedly due to feeding on scraps of meat from South American countries. It is interesting to observe the steps that have been taken in the States to obviate a recurrence of this. The Government of California have appointed veterinary officers to visit every ship that comes into port, and all ship's stores are held up until the vessel leaves the port. I think that Professor Gaiger said there was a distinct possibility of disease being introduced from South American countries, and I think you would hardly accuse him of exaggeration.

Mr. J. A. DIXON, Chief Veterinary Officer (Leeds): Although I am quite unable to contribute any valuable observations on the disease in question this morning, I should like to voice a word of protest against the opinion, which seems to be gaining ground every year, that this country is entirely dependent upon South America for its meat supplies. I have noticed this for years at gatherings connected with the food of the people and at veterinary gatherings. Moreover, only the other day the *Daily Mail*, in a leading article, said that the public of this country obtained over eighty per cent. of its meat from South America. Whilst we sympathise with the public in London, who undoubtedly do depend largely upon South America for their meat, we in the North of England deny that our public depend so exclusively upon South America for our meat supplies.

We can all remember the consternation produced in certain circles of the meat trade when the Importation of Carcases Order was introduced: the Smithfield people thought they were to be ruined. What is the position now? The Smithfield Market and all the markets find they can get all their supplies without these continental carcases coming along. I suggest, therefore, that this extensive importation of chilled and frozen meat from South America, with its attendant dangers in connection with the introduction of disease, is not so essential as is supposed. It is true that meat is cheaper in the wholesale market as a result of these importations, but it is not cheaper to the consumer, who is not receiving the benefit he should receive from these huge importations.

I would suggest for your consideration that it is not in the interests of the public of this country that these huge importations should be taken for granted as being absolutely essential to their well-being. (Applause.)

The CHAIRMAN: If no one else has any question to ask or contribution to make to the discussion, I will call upon Mr. Powley to reply.

THE REPLY.

Mr. J. O. POWLEY: I must, in the first place, thank all the contributors to the discussion for the very flattering remarks which they have made about myself: I feel that I do not deserve the great majority of them. I think the majority of the speakers who worked under me probably felt that they must say something flattering. (Laughter.)

It was very difficult, in the first place, with a limit of 5,000 words, to express in a paper all that one would wish, and one had to endeavour to pick out the features of the subject which one thought would be of interest to the practitioner and of use to him in the course of his ordinary practice.

There are many things one could have put in that had to be left out, and when I read the paper after writing it I felt I had made rather a hash of the whole thing. (Cries of "No.").

I do not know that I can say much on Professor Gaiger's remarks: they were simply statements of fact. Unfortunately I was put more or less in the same position as Professor Gaiger: I had to state facts, because I think everything known about foot-and-mouth disease has already been put into print, and we must therefore agree with each other. There is one point, however—rats acting as carriers. Several speakers mentioned this point, and it is an interesting factor which has been exercising the minds of the inspectors of the Ministry in dealing with outbreaks.

Some years ago we were compelled, owing to the nature of the circumstances, to carry out a certain number of isolations, and I can recall two occasions upon which disease broke out in small hamlets where there were five or six other farms, all contiguous. We isolated and got no spread, and I am convinced that, had we slaughtered, the infection would have spread to other farms in the hamlet, due to the fact that rats would have acted as mechanical carriers. You might use that as a statement in favour of isolation, but there are other bigger factors which would countermand that one.

The question of initial outbreaks is a very difficult one. I feel convinced, in my own mind, that the large majority of the outbreaks we got (in Lanarkshire in particular) were from South American meat products. It is becoming more common to use "green cut bone," and I think from 50 to 75 per cent. of the bones used are from South American meat. It will not keep, and it is used in the summer time, and is a tremendous source of danger.

Mr. Young mentioned Fen foot rot. I have a letter from one of my old colleagues in which that is mentioned,

but I am unable to read it. (Laughter.) Mr. Young also made reference to his being recalled from leave to an outbreak of foot-and-mouth disease. As a Sassenach, I think he should not have thought of the expense, but should have said: "Well, duty first."—and should have got back as quickly as he could." (Laughter.)

On the question of diagnosis, it is very easy for an inspector of the Ministry to say "Yes," because in the majority of cases his diagnosis is not questioned—we usually send men of some experience. But it is a much more difficult matter to say "No." You say "Yes," you kill your evidence and burn it, but when you say "No," and make a mistake, look out for storms, for it is sure to find you out.

Mr. Davidson made some comment on the internal lesions—those seen in the rumen and the heart. Those are not my own findings: I had seen it in print that these lesions had been found, and out of curiosity, I thought I should like to see them. Accordingly, I spent a considerable time at certain outbreaks, making *post-mortem* examinations to satisfy myself if they were present. I was surprised to find the number of times in which they were present, and I thought it might be of interest to the members of the Association to know that these lesions were in existence, because I think there are very few members of the profession who realise that you can get these lesions internally.

On the question of stomatitis, perhaps I was remiss in not making the statement that the constitutional disturbance met with in that disease is very slight; indeed, in some cases there is no constitutional disturbance at all.

Mr. Rabagliati mentioned the question of human infection. I have had a warning that I must not say anything about that, but one of the Ministry's inspectors, some years ago, was stated to be seriously affected with foot-and-mouth disease. He was a very sick man. Whether the medical men took steps to prove it, I do not know, but in Ireland the statement has also been made that some of the Irish inspectors have actually contracted the disease when dealing with outbreaks; here again, whether they have taken steps to prove the diagnosis by inoculation experiments I do not know. In the old days it used to be a common statement that a big percentage of what we used to call the "bullock wallopers" on the boats would arrive in a very sick condition, showing vesication of the nails and mouth, because a large percentage of cargoes of cattle coming in those boats were infected with foot-and-mouth disease. These men worked in their bare feet, probably with abrasions, or cuts, and so they stood every chance of contracting the disease. Mr. Rabagliati pointed out, also, the extraordinary contradictions presented by foot-and-mouth disease from a symptomatology point of view. We unfortunate individuals who have to work with the disease are astonished at the things it does and does not do. We get what appears to be a most active virus, which we think will spread rapidly, and we find we cannot transmit it. We get another outbreak, showing similar lesions and little constitutional disturbance, and we say "we are not afraid of this" and yet it goes like wildfire, and you cannot stop it. Therefore, always treat the disease with a great amount of respect.

(*Continued at foot of next column.*)

Animal Diseases Research Association.

Mr. Pool's Successor.

Strong Support for the N.V.M.A. Protest.

The following outspoken leading article, relative to the above, appeared in last Saturday's *Scottish Farmer*:—

"A.D.R.A. Crisis."

"We are almost ashamed of the title. 'Stunt' journalism has no attractions for us, and anything that savours of it we would gladly eschew. But the facts which have leaked out, and the public protest which has been evoked from the National Veterinary Medical Association regarding the appointment of a successor to Mr. W. A. Pool, M.R.C.V.S., in our opinion justify the title. A crisis has been reached in the history of the Animal Diseases Research Association, and a false step will be taken if, as is presently contemplated, a member of the medical profession,

(*Continued from previous column.*)

Mr. Rabagliati also made reference to the danger created by the existence of private slaughterhouses on farms. There is a clause in the Foot-and-Mouth Disease Infected Areas Restrictions Order which stops the use of private slaughterhouses on farms within the affected area. We find that to be absolutely essential, owing to the fact that we have no control over such slaughterhouses.

I think that Mr. Begg rather misunderstood Professor Gaiger on the point of the virus in bones. It is in the dead bone that the virus remains active. On the question of disinfection, the disfectant we use is formalin in 2 per cent. solution, and I believe the experiments carried out by the Research Committee showed that one-half per cent. formalin has proved efficient in disinfecting, by spraying, small stacks of hay, and other food for animals, so that we think we are quite on the safe side.

Mr. Simpson's goat appeals to me very strongly, because there were four goats on the farm I have previously mentioned where the disinfection had to be repeated: there were three veterinary inspectors and the actual goat—(loud laughter)—and if the poor, unfortunate animal had not bleated when it did, we should not have known for some days that he was there.

The symptoms and lesions in the goat conform to the symptoms and lesions seen in the sheep. In the goat you get sloughing of the dental pad, as you do in sheep.

Mr. Rodger's remark about the Californian Government appointing veterinary surgeons to deal with sheep in port is rather informative and points to the fact that the U.S. American authorities are fully wise to the risks run through South American meat products, and I know that the Farmers' Unions (in England, at any rate) are very anxious that America shall have South American meat products, if possible, believing that, if she does, the market for these products will be thus enlarged—and Mr. Dixon will get nearer his ideal of the use of more home-bred meat in this country.

Somebody mentioned the mammary lesions in pigs. These are very distinctive when they are present, and you do get them in the majority of sows affected.

I have some specimens of foot-and-mouth lesions here, which I thought would interest you. (Applause.)

and not a veterinary surgeon, be placed at the head of the Moredun Institute and its field activities. A bacteriologist and a professor of human pathology are necessary members of any association engaged in research work affecting the diseases of animals, but no medical man, however eminent, can possibly be as efficient in investigating grass sickness in horses, bovine sterility, and bovine abortion, louping-ill and scrapie, as a veterinary surgeon.

"The cobbler should stick to his last; he may do good amateur work in other departments, even like Billy Bray, the Cornish Methodist, in preaching, but the repairing of boots and shoes is his job, and unless he excels there he will come to grief. Farmers have great confidence in the A.D.R.A.; they want to see it flourishing, but it will forfeit their confidence if one is appointed to be its head who is an amateur in animal diseases.

"These criticisms will doubtless be met by a disclaimer: we will be told that it is not intended to make the association and its institute at Moredun an appanage of the medical profession, but that a big scheme is on foot, to embrace under one control the University of Edinburgh, the Royal (Dick) Veterinary College, and the A.D.R.A. To do that is to defeat the end for which the A.D.R.A. exists. It has accomplished much because its government is autonomous. Its one job is the investigation of animal diseases, and in order to perform that work it must be manned by those who have been trained to study and to heal animal diseases. The mentality of the man who leads in medicine may have much in common with the mentality of the man who leads in veterinary science, but the experiences of those in training for the two professions are quite distinct. No one would for a moment call in a veterinary surgeon who did not possess a degree in human medicine, to prescribe for a human patient, and it should appear to be equally absurd to place an expert in medicine at the head of a veterinary research department.

"The essence of success in research into animal diseases lies in securing the co-operation of stockowners and their employees. Without the cordial co-operation of the shepherd no progress whatever will be made in louping-ill or scrapie research. In regard to the latter that has already been abundantly proved. Much work has been done by medical men in investigating scrapie, yet it would be nearly correct to say that we know no more about it to-day than was known when investigations began. It may be said that a similar remark applies to horse diseases like grass sickness and joint-ill, in connection with which veterinary surgeons have had a free hand. Our reply is that the indictment is justified, but that less would have been learned had these matters been in the hands of medical workers.

"The A.D.R.A. has been fortunate in its patrons; they have been liberal, and their liberality has been unusually discriminating. It is because we recognise this, and also the hold which it has upon stockowners, as witness the doubling of its contribution by the Blackface Sheep Breeders' Association, that we plead for two things—(1) the autonomy of the association, and (2) the placing of a member of the veterinary profession at the head of its activities. Nothing is more likely to deter young men of brilliant parts from entering the veterinary profession than the possibility that the plums in the profession will not go to them but to members of the sister profession. The veterinary profession has for too long been the Cinderella of the professions devoted to the healing art; a better day having dawned, and the profession itself having all along taken the lead in levelling up the grade of students—it will be a disaster for veterinary science if a step such as is contemplated in connection with the Moredun Institute should become an accomplished fact."

. . . . . .

In this connection, Professor S. H. Gaiger, Director of the Department of Veterinary Pathology, the University of Liverpool, has addressed the following letter to the Editor of the *Scottish Farmer*:—

21*st September*, 1929.

The Editor, "Scottish Farmer,"

"VETERINARY RESEARCH CRISIS."

"Sir,—I have altered your headline because this matter is more than an 'A.D.R.A. Crisis.' Your splendid leading article will earn you the undying gratitude of every veterinarian. The pity of it is that one who can render such eminent public service should ever have to retire.

"It seems to be established beyond doubt that some new *Scheme* is proposed for the A.D.R.A. by which, in some way, the control of the research work into animal diseases will pass into the hands of a medical man who will be either a nominal, part-time, or whole-time Head.

"I have written the Chairman of the A.D.R.A. directors for information, but have been met by evasion. He sent me a copy of his letter to the National Veterinary Medical Association and there again one finds evasion.

"If there is nothing to hide, let the Scheme be published and let the veterinary profession judge. Concealment breeds suspicion. If unwilling to publish, why did Mr. Wallace not send a copy of the Scheme to the N.V.M.A.? Will it not bear inspection?

"The time is past when medical scientists can be regarded as more likely than veterinary scientists to solve animal disease problems. It has cost the country vast sums of money to learn the lesson of the advantages of the cobbler sticking to his last. There are large numbers of unsolved medical problems but, so far, I have not heard it suggested that a veterinary scientist should be put in control of the laboratories of the Medical Research Council. One meets comparatively few medical research workers nowadays who think they will find an easy road to fame by invading a province of which they know almost nothing, though I know there are still some in existence who are destined to suffer disillusionment. The veterinary research worker has devoted just as much time and energy in getting experience as has the medical research worker; in fact, the former is often a man of much wider experience and has studied a much wider range of literature.

"The A.D.R.A. would be capable of doing even more excellent work if there was considerably less 'control,' and much more stability of policy. If there were fewer trying to run it and fewer seeking *kudos*, the workers would have an infinitely greater chance of getting successful results. That, after all, is what the farmers are looking for and they do not seem to have been very disappointed with what they have had so far. If a Mussolini were in charge he would at once abolish the so-called Scientific Advisory Committee.

Yours, etc., S. H. GAIGER."

Medical Officer's Certified Milk Allegations.

The following letter has been addressed to the Association by Lt.-Col. C. Maddock, Hon. Secretary of The Certified and Grade A (Tuberculin Tested) Milk Producers' Association :—

THE CERTIFIED AND GRADE A (TUBERCULIN TESTED) MILK PRODUCERS' ASSOCIATION.

Foxglade House,
Shinfield, Reading,
7th September, 1929.

"Dear Sir,—I have been requested by the Association to forward you a copy of the correspondence that I have had with Dr. F. H. Morison, and a copy of my letter to the Ministry of Health. The Association would be very grateful to any of your members if they could very kindly inform me whether in their experience they have ever come across tubercle in Certified or Grade A (T.T.) milk.

I am, yours faithfully, C. MADDOCK,
Hon. Secretary."

The whole matter is explained in the following letter, which occurs in the correspondence to which Col. Maddock refers :—

THE CERTIFIED AND GRADE A (TUBERCULIN TESTED) MILK PRODUCERS' ASSOCIATION.

Foxglade House,
Shinfield, Reading,
3rd August, 1929.

" Dear Sir,—Several members of this Association have called my attention to the publicity given to a statement made by you at the recent Congress of the B.M.A. in Manchester, notably the *Daily Telegraph* and *Live Stock Journal*. From the latter I copy out the following :—

" Grading of milk, declared Dr. F. H. Morison, had been a total failure." " Certified milk had been found highly infected with tubercle."

" As, at the next meeting of our Association, I will have to answer many questions on the subject, I would be most grateful if you would very kindly give me the facts on which your statements were made. I am forwarding under separate cover a copy of the *Dairyman* which contains the papers read at the recent Conference held at Reading by this Association. I do hope you will be able to find time to glance through a few of them, especially those showing the progress of the movement, that by Major Dunkin on the Tuberculin Test, the one by Dr. Stenhouse Williams.

" It is, I admit, an imperfect world, with good and bad in every walk of life, but it is very hard on men who are above reproach when journalists seize on such statements and thus spoil their trade. As an honorary worker in the National Institute for Research in Dairying, I know by our statistics that the average Certified and T.T. producer does deliver the goods and the veterinary surgeons, anyway in this neighbourhood, are honest and extremely capable men. Yours faithfully,

C. MADDOCK, Hon. Secretary."

Dr. F. H. Morison,
The Courts, Carlisle.

. . . . . .

We trust that any members who are in a position to do so will comply with Colonel Maddock's request for information.

ABSTRACT.

["**The Incidence of Tuberculous Infection in the Milk Supplies of Scottish Cities.**" NORMAN C. WRIGHT. *British Medical Journal*, Sept., 1929, page 452.]

The author refers to the somewhat indiscriminate statements which have appeared recently in the public press regarding the actual extent of the tuberculous infection of milk. Since no collected data of the present position with regard to infection appears to be available, and in order to fill this gap in our collected knowledge, an attempt has been made to put together such relevant information as is available with regard to the milk supply of Scotland.

The author quotes the figures relating to the percentage of infected milks which, according to various authorities, are received by certain cities in Britain and in the United States of America. While these figures show considerable divergence, varying as they do from 8.3 to 20 per cent., they all point to the very considerable infection of the city milk supplies examined by these various authorities.

In the present survey an analysis has been made of the infection of the milk supplies of Edinburgh, Glasgow and Aberdeen, as evidenced by the data available in the reports of the Medical Officers of Health of these cities, and by personal enquiry from the officials. It should be emphasised here that the figures quoted refer only to samples of *raw* milk. Actually, a considerable proportion of the milk supply—in Glasgow as much as 80 per cent.—is pasteurised before delivery to the consumer, and the risk of infection will be very considerably reduced.

TUBERCULOUS INFECTION OF CITY MILK SUPPLIES.

In collecting the figures from the various reports, only those which referred to infection as determined by biological (inoculation) tests were included, since microscopic tests are at best only a very rough guide to the presence of tubercle bacilli.

In the first instance the collection of data was limited to the infection of samples of mixed milk received from country sources. It was at once found that the year-to-year variations were so great as to nullify entirely any direct yearly comparisons between the different cities, owing to the comparatively small number of samples tested each year. For instance, the results for Edinburgh for each of ten successive years were found to be 8·5, 9·3, 9·9, 11·6, 2·2, 5·3, 14·0, 8·1, 10·9 and 5·7 per cent. It was therefore found necessary to take an average of the results over an extended number of years, and in this way it was possible to obtain figures which were of definite significance.

The results showed that in Edinburgh, during the period 1918-1927, 795 samples were examined and 67, or 8·5 per cent., were found to be infected. In Glasgow, between 1921 and 1927 inclusive, 1088 samples were examined and 28, or 2·6 per cent., found to be infected. For Aberdeen, between 1920 and 1927, of 1206 samples examined, 66, or 5·5 per cent., showed the presence of infection. The figures show a striking difference between the percentage of infected samples in each of the three cities and the question was at once raised as to how far the results obtained were true indications of the average infection of the whole of the milk supply of each city. Further information was therefore sought in order to determine (*a*) how far the results at each centre can be agreed with those obtained in previous years, and (*b*) how far the possible variations in the technique of the test at each centre might render the results incomparable.

With regard to the first point, it was found that on the whole the results obtained in this enquiry for each of the three cities agreed fairly well with those found in previous years and this is taken to afford sufficient evidence that the present results in all three cities represent a true average of the normal infection of each city's milk supply. In the case of Glasgow, the number of tests carried out since 1908 has been considerable and these show as may be anticipated that the highest incidence of infection was found in

samples from cows with disease of the udder and in samples of mixed milk from a number of cows.

The author then considers the second point raised, *viz.*, whether the variations in the results can be attributed to differences in technique in testing the milk samples. It was found, on enquiry, that the technique used at the three centres for demonstrating *B. tuberculosis* was not quite the same, but reasons are given why it may be considered doubtful whether this variation influenced the results to any marked degree.

If, therefore, it may be assumed that the tests at each centre are strictly comparable, we are faced with a quite extraordinary difference in the incidence of infected milk in the various country districts from which the city supplies are drawn. Such a difference may actually exist, but the criticisms of the tests at the individual centres prevent any definite conclusion being reached.

The outstanding fact brought out in this short discussion is therefore the need for the adoption of a uniform test at each centre. It is only by the standardisation of technique that results can be obtained which will be directly comparable and beyond criticism.

The Incidence of Abdominal Tuberculosis.

It is an established fact that a considerable proportion of cases of abdominal tuberculosis is due to infection of bovine origin, and it is assumed that such infection is, in a number of cases, caused by the consumption of tuberculous milk. If tuberculous milk is, in fact, a frequent cause of infection, we should expect that the differences in the incidence of tuberculous milk in each of the three cities referred to above would be reflected in the mortality from abdominal tuberculosis.

Actually, the mortality from this cause in Edinburgh during the years 1911-1920 amounted to an average number of 120 deaths per million of the population; in Glasgow the mortality over the period 1911-1918 amounted to 171 and in Aberdeen, over the period 1913-1920, the mortality amounted to the average number of 133 deaths per million of the population. For the years 1919-1927 in the three cities the average annual mortality figures were approximately the same, *viz.*, 88 to 92 deaths per million of the population.

From these results it appears that while there was a slight variation in the death rate between the cities during the earlier years, the death rates for all three cities during the last eight or nine years have been practically identical, although these were the years during which large variations were found in the incidence of infection of the city milk supplies.

Infection of the population by the consumption of tuberculous milk is obviously more likely to affect the infant population most heavily; it has been estimated that 50 per cent. of the cases of abdominal tuberculosis in children under 5 years of age is of bovine origin, and is to a great extent due to infection of the milk supply. A check was therefore made of the deaths from abdominal tuberculosis in children under the age of 5 years, since this should give a more accurate estimate of milk-borne infection. There was again found to be no considerable difference between the death rates for two of the cities, Edinburgh and Glasgow, the mortality for the period 1921 to 1927 being 37 and 31 deaths per annum per million population respectively.

The attempted correlation between the incidence of tuberculous milk and the mortality from abdominal tuberculosis in the cities investigated is, however, complicated by the fact that a considerable portion of the milk supply is pasteurised before delivery to the consumer; and while recent work indicates that pasteurisation is not an absolute safeguard against tuberculosis, it very greatly reduces the risk of infection.

If the occurrence of abdominal tuberculosis provides an indication of the relative cleanliness of the milk supply, it appears that the occurrence of living tubercle bacilli in the milk as delivered to the public (that is, after pasteurisation or other treatment) is the same for each of the three cities investigated.

The Value of Tuberculin-tested Herds.

The remainder of the article deals with the value of tuberculin-tested herds. The movement for the establishment of such herds was based on the assumption that dairy herds which had been cleared of tuberculosis, and which were subsequently tested at intervals in order to ensure the early elimination of any new reactors, would provide the consumer with a guaranteed tubercle-free milk. The criticism has been made that even these precautions do not give an absolute guarantee of freedom from infection, on the grounds that the interval between periodical tests (usually six months) may permit a cow to develop tuberculosis and possibly therefore to excrete tubercle bacilli in the milk. Such a criticism is *a priori* hardly valid in view of the general recognition that infection of the udder takes place only in the later stages of the disease. Certain results obtained at Glasgow provide, however, a remarkable practical demonstration of the value of tuberculin-tested herds in ensuring the production of tubercle-free milk.

During the years 1909 to 1914 the city hospitals were supplied with milk which was obtained from herds under the strict supervision of the veterinary officer. The herds were not regularly tested with tuberculin, but careful examination of the animals was made periodically and any suspicious animals were at once re-tested with tuberculin. As a result the periodical testing of the milk from these herds *revealed only one infected sample during these five years.*

From 1921 to 1926 the hospitals were supplied with milk from untested herds, and, out of 923 samples examined, 28 (or 3 per cent.) were found to be infected.

During the years 1927 and 1928 the hospitals were supplied with milk from tuberculin-tested herds, and, *out of 550 samples examined, not one sample was found to be infected.* This is the more striking as the quantity of milk tested is relatively large, amounting to approximately half an ounce for every gallon of milk supplied to the hospitals.

These figures effectively demonstrate the entire freedom from infection of milk from tuberculin-tested herds, and illustrate the unique value of such milk from the point of view of public health.

R.C.V.S. Obituary.

Cunningham, John, 25 Sang Road, Kirkcaldy. Graduated, Glasgow, 18th May, 1911. Died 15th June, 1929.

Thompson, Richard Cuthbert, 60 Greenhill, Weymouth, Dorset. Graduated, London, 29th March, 1875. Died, 17th Sept., 1929. Aged 79 years.

. . . . . .

Death has robbed the South African Veterinary Medical Association of three of its most distinguished members recently. On June 17th, 1929, Dr. C. P. Neser died suddenly; on July 27th, 1929, Sir Frederick Smith, the first Hon. Associate, passed away; and on 6th August, 1929, the death of Major S. E. Johnston occurred. Details of their careers will appear in the next issue of the *Journal S.A.V.M.A.*

Central Provinces Veterinary Association and the Thanksgiving Fund.

The members of the Central Provinces Veterinary Association contributed the sum of four hundred rupees to the Thanksgiving Fund of H.E. The Viceroy and Governor-General of India.

The organiser of the Fund was Mrs. R. F. Stirling, the wife of the present officiating veterinary adviser, and all the incidental expenses were borne by her and the gazetted officers of the Civil Veterinary Department in the Central Provinces.

The Central Provinces Veterinary Association are a young organisation and their members should be very proud of their achievement.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Sept. 30th—Meeting of N.V.M.A. Special Committee to make nominations for Standing Committees for the current year, 3-15 p.m., 10 Gray's Inn Square, W.C.

Oct. 1st—Meeting of Joint Sub-Committee *re* Salaries of Whole-time Appointments, 10 a.m.; Appointments Committee, 10-45 a.m.; Joint Meeting of the Appointments and Veterinary Officers' and Public Health Committees, 11-15 a.m.; Veterinary Officers' and Public Health Committee, 11-45 a.m.; Organising Committee, 12-15 p.m.; Parliamentary Committee, 12-30 p.m. All at 10 Gray's Inn Square, W.C. N.V.M.A. Council Meeting, 3-30 p.m., at 10 Red Lion Square, W.C.

,, 2nd—R.C.V.S. Registration Committee Meeting.

,, 3rd—Meetings of the R.C.V.S. Examination, Registration and Parliamentary Committees.

,, 4th—Meeting of the R.C.V.S. Library and Finance Committees; R.C.V.S. Council Meetings; Meeting of the International Congress Organising Committee.

,, 7th—Meeting of the Editorial Committee, N.V.M.A., 10 Gray's Inn Square, London, at 4-30 p.m.

,, 10th—Meeting of the Central Division, N.V.M.A., 10 Red Lion Square, W.C.1, at 6-30 p.m.

,, 10th—Meeting of the Lancashire Division, N.V.M.A., Grand Hotel, Aytoun Street, Manchester, at 3 p.m.

The 1929 Congress Number of the Record.

Members requiring additional copies of this issue are requested to make application at once to the Editorial Representative, N.V.M.A., 10 Gray's Inn Square, W.C.1, enclosing remittance at the rate of one shilling a copy, post free.

Congress Group Photograph.

Members are informed that they can obtain copies of the Congress Group Photograph, reproduced in this issue, upon application (enclosing 5s. remittance) to R. Yerbury and Son, Edinburgh.

N.V.M.A. Clinical Prize Scheme for Students.

Students who are eligible to participate in the above scheme are reminded that their notes must be in the hands of the General Secretary, N.V.M.A., 10 Gray's Inn Square, W.C.1, by Monday, 7th October, 1929.

Royal Veterinary College Opening Ceremony.

The opening ceremony of the Royal Veterinary College will take place at 3 p.m. on Tuesday, 1st October, when the Chair will be taken by Lt.-Col. Sir Merrik R. Burrell, Bart., C.B.E., and the opening address will be delivered by Major-Gen. Sir John Moore, K.C.M.G., C.B., F.R.C.V.S. This will be followed by a demonstration of the value of the cinematograph and the epidiascope for veterinary educational purposes.

Practitioners and students, with their friends, are cordially invited.

CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents

Human Infection from Tuberculous Bovines.

To the Editor of the Veterinary Record.

Sir,—A subject mentioned by Prof. Wooldridge, in his presidential address at Sheffield, has of late frequently been occupying my thoughts, and I desire, in addition to offering him my congratulations on that address, to compliment him on bringing this matter, which must be of great public health interest, into prominence. I refer to coughing tuberculous animals in a shed, infecting the atmosphere thereof, to the danger of attendants upon such animals. We, as a profession, know only too well its infectivity to the neighbouring animals in that shed.

This danger has often been suspected by me, owing to the ease with which tiny particles of expelled sputum from the coughing beast may be found to contain colossal numbers of tubercle bacilli—and this sputum I have found on mangers, the hay awaiting to be eaten, on tying posts, partitions, etc., etc. So that, besides the attendants inhaling the infected atmosphere, it is quite probably conveyed on their hands, clothing and equipment.

My invariable practice, after removal of the offending animal, is to treat the immediate surroundings of the place where the animal stood, with the flame of a blow-lamp before proceeding with the more general disinfection.

However, when I consider the possibility of tracing human infection to a bovine origin, I am always reminded of a sentence I read on the subject as a student, in Muir and Richie's "Manual of Bacteriology," in a chapter upon "Varieties of Tuberculosis." This sentence is to be found on page 288, and reads:—

"The question is still an open one, and it is doubtful whether or not a bovine type (of tubercle bacillus), after long sojourn in the human tissues, will assume the characteristics of the human type."

To the best of my knowledge, scientific attainments have not yet been able definitely to remove that doubt, but nevertheless, I am of opinion that this subject is well worthy of the attention of our sister, the medical, profession, in addition to our own.

Yours faithfully, J. Howard Jones, M.R.C.V.S.,
County Veterinary Inspector, Glamorgan.

The Editor acknowledges the receipt of the following:
Communications from Mr. R. E. Glover (Cambridge), and Miss E. G. Knight (Dorking).